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The Reply of the Conservators of the Thames to the Metropolitan Board of Works.

IT mentioned in our last number that we had received, too late for full investigation at the moment, the replies made by the officers of the Thames Conservancy Board to the Reports of Messrs. Bazalgette, Law, and Chatterton, and of Messrs. Keates and Dupré, which were received and made public by the Metropolitan Board of Works in April last. The documents now printed by the Conservators of the Thames are, first, "Remarks" on the above-named Report, by Mr. Leach, Engineer to the Conservators; secondly, "Observations" on the same document by Captain Burstal, R.N., secretary to the same body; and thirdly, a "Rejoinder" by Captain Calver, R.N., F.R.S., to the same production, which, it will be remembered, was put forth as a reply to the first Report of Capt. Calver, dated 15th October, 1877. The vital importance of the general question to the health and welfare of the metropolis is such as to render it proper to go with some care into the main points now at issue.

Our readers may have observed that in our former observations on this subject, we have not undertaken either to support, to criticise, or to oppose the first statements of Captain Calver, or to anticipate what reply that officer might make to the attack made on his accuracy, from the point of view which the Conservators might be expected to take. Our calculations were our own; based on a wide experience, or on facts cited from documents and reports accessible to the public. We could not, in such a mode of inquiry, avoid pointing out the numerous understatements made, on the part of the Metropolitan Board, of the damage which they were certainly inflicting on the river. But what Captain Calver might say in reply we did not venture to anticipate. Though somewhat deliberate in their movements, the Thames Conservators have now made out, it will be seen, a very far stronger case than that which we indicated as sustainable.

Capt. Calver's first Report was illustrated by two maps of the River Thames. And we venture strongly to recommend to those of our readers who take a serious interest in the question to provide themselves with these, or with some other maps, and to fix the main points to be discussed in their minds by this means. The appendix to the Report of the Engineer to the Metropolitan Board also contains maps. Of these, the first is a copy of the Admiralty Chart, No. 2484, of the River Thames from Victoria Docks to Purfleet, giving soundings, and dated in 1857. The second is a corresponding chart for 1871. The comparison of the two charts shows that out of a superficial low-water average of 2,696 acres of river, 622 acres on the first chart, and 1,206 acres in 1871, have a depth of 20 ft. or more at low water, while the area of less than 10 ft. depth at low-water had diminished, in the same time, from 679 to 405 acres. It is not very clear for what reason this piece of evidence has been put in by the Metropolitan Board. They can hardly intend to maintain that the turning of the sewage into the Thames has scoured the river and increased the tidal flow. That this effect has been produced by the dredging carried on under the Conservators, is stated by the engineer of that body; and the two plans described fully support that statement. It is, however, stated by Capt. Calver that the chart of 1857 is a tolerably close copy of Admiral Bullock's survey of the Thames in 1830-33; so that the considerable changes shown have occurred, not in fourteen, but in thirty-eight years. The connexion of the causes of this change with the case of the Metropolitan Board is not obvious. As it is, the comparison of the charts does not even go to support the view first hinted. Since 1863, Capt. Calver now states, there has been an increase of the area of the 20 ft. channel from 927 acres to 988 acres, or 3½ per cent., instead of the 78 per cent. stated by Sir Joseph Bazalgette. Assuming the accuracy of this statement as to fact, one is lost in wonder to decide whether the publication in the appendix was a sheer outcome of unacquaintance with so important a fact as the date of a chart, or an effort to hoodwink the public.

A series of longitudinal sections of the river Thames follows, showing the quantity of matter in suspension, and the proportion of organic matter in the surface water, in various parts of the river on the 15th of January, 1878. The outcome of these sections, if they are accepted as absolutely accurate, is to the effect that the exact part of the Thames in which, according to Capt. Calver's first report, the most foul and undiluted portion of sewage was present, actually contained the least amount of matter in suspension, as well as of organic matter. The logical result is that a full flow of crude sewage purifies river water, and renders it remarkably free from ordinary mud, as well as from any sensible marks of efflux from the sewers. This reasoning has, apparently, convinced the majority of the Metropolitan Board of Works. For persons whose object it is, not to bolster up a case, but to arrive at the truth, it will probably be unnecessary to say any more. Sir Joseph Bazalgette's mathematical studies do not seem to have acquainted him with that mode of demonstration, not unfrequently used by Euclid, the *reductio ad absurdum*, of which these sections furnish so remarkable an instance. The discrepancy, however, is explained by the following remark of Capt. Calver (p. 45),—"It happens that Sir Joseph Bazalgette's samples which he supplied to the chemists were all obtained on the 15th of January of the present year, when the river was *more than usually full of fresh water*." The standard level above the lower sills of Teddington lock is 9 ft. 9 in.; the flow of the river over the weir at that height being stated at 350,000,000 gallons in the twenty-four hours. On the 6th of January there was a heavy flood; the water rising to 15 ft. 6 in. above the sill. As this ran down it swept and purified the Thames, and on the 15th, when the samples were taken, the water was still from 3 ft. to 4 ft. 6 in. above the summer level. Thus the remarkable candour which led the engineer of the Metropolitan Board to select for the time of testing the purity of the Thames a season when the river, having just been swept out by a heavy flood, contained very much more than its usual proportion of fresh water, may be appreciated. It is amusing to find that this expedient has so far overproved the case against Capt. Calver as to arrive at the nature of the adverse mathematical proof above hinted at.

These memorable sections are followed by a plan of the river Thames, from Greenwich to Yantlet Creek, showing by a red tint "those portions of the banks which have been washed away." For it is a very remarkable fact that, while we are asked, on the authority of plates 1 and 2, to believe that the area of the 20 ft. channel of the Thames has increased 78 per cent. in eight years, or nearly 10 per cent. per annum, we are at the same time assured that Messrs. Bazalgette, Law, and Chatterton "have arrived at the conclusion that at least 1,000,000 tons of soil are washed into this part" (the lower reaches) "of the river every year, in addition to that which is brought down from above." "This is, in fact, the real source of the mud deposit on the banks of the river, which, as we have shown, Captain Calver has erroneously attributed to metropolitan sewage" (Report, p. 17). As to this Captain Calver rejoins (Rejoinder, p. 43), "The washed shores Sir Joseph thus refers to are shown by plate 18 of the appendix to be below the outfalls, but to obtain soil for the new banks he goes lower down still, and quote's from Lyell's 'Principles of Geology,' to show that some of the mud may possibly have come from the crumbling cliffs of Sheppey. It will not be forgotten that Sir Joseph has repeatedly denied that the flood stream bears upward and deposits sewage-mud of the specific gravity of 1·550, but in the face of this denial he credits the same stream with bringing up the Thames material of the specific gravity of 2·371 from a Kentish island some forty miles away. Of course Sir Joseph Bazalgette cannot be allowed to run with the hare and hunt with the hounds in this way." In spite of the irresistibly comic element which these adroit, but short-memoried shifts introduce into the discussion, we should almost feel too much pity for the three engineers who have allowed themselves to make such mutually destructive statements to proceed, were it not for the sense of the deep gravity of the question. The Metropolitan Board thought that they were firm in their seat, and that the best plan was to treat the representations of the Thames Conservators with ridicule. They cannot complain if the ridicule

returns, with a good deal more than cent. per cent. interest, on themselves.

It is the case, however, with regard to this annual deposit of a million of cubic yards, to provide which Sir J. Bazalgette has recourse to Higham Marsh and the Island of Sheppey, that the attempt to show that it is brought from the "Saltings" and river banks, is based on not only imperfect, but erroneous, data. Capt. Burstal, who, we believe, had the advantage of serving under Admiral, then Captain, Bullock, in the survey of the Thames in 1832-34, brings out very distinctly the facts at which we hinted on a previous occasion. The maps of the Tithe Commissioners are of various degrees of accuracy. Those which are called first-class maps are regarded as reliable. But such is not the case with what are called second-class maps. It is from these second-class maps that Sir Joseph Bazalgette has taken the outline which he has ascribed to the Thames in 1839-44. It is not, however, only a question of the unreliability of these maps. They can be checked by the survey of Capt. Bullock. And they are found, on comparison with this survey, to be wrong. Thus Capt. Burstal says (Observations, p. 34),—"By the little map (1840, second-class map) of the saltings in the parish of Stanford-le-Hope, in Mucking Bight, the shore-line of salting is, at most parts, at least 100 ft. further out in the river than it was by the Admiralty map 1834. By this it would appear that the shore had gained this distance on the river instead of being washed away." Again, at Higham, the second-class tithe maps show the saltings about 150 ft. in advance of the Admiralty survey. Capt. Burstal gives further details, to which we refer those who need more information. But we have said enough to show that it is not from the lower reaches of the river that that accretion of mud is derived which Sir Joseph Bazalgette, if he wishes to maintain even the semblance of consistency in his argument, tacitly admits to amount to a million of cubic yards per annum.

In that estimate, as a minimum, we have the satisfaction of agreeing with the engineer of the Metropolitan Board of Works. We are not about, now, to fatigue our readers by the discussion of grains of solid matter per gallon of sewage or of Thames water. We have gone fully into that subject before. Most of our readers will probably consider that, as a minimum quantity, we have placed the matter beyond controversy. To any one who doubts that fact, we recommend the attentive perusal of Captain Calver's pamphlet. There is always a great liability to err in working from very small to very large quantities. In chemical analysis this is signally the case: and we wish to point out that, in the present state of chemical science, the value of analysis depends, to a great extent, on matters altogether external to the laboratory. A good chemist can be relied on for an analysis of a fluid brought to him,—at least, when it is not a question of the more or less subtle combination in which the elements detected by his tests may have existed in the fluid examined. But the fair sampling of the fluid to be analysed is as important an element of accuracy as any part of the chemical process. We have seen that samples of the Thames water were taken on the 15th of January; no doubt they were duly analysed. But they were not fair or average samples. The analysis, therefore, is absolutely worthless. The detection of so remarkable an oversight,—to call the occurrence by the most complimentary term,—is enough to throw doubt on the fair character of other samples. Especially is this the case when we find that when the analysts of the Thames Conservators find fifty-five grains of solid matter in a gallon, those of the Metropolitan Board can only detect 23·06 grains in a gallon. Here again a knowledge of dates comes in with great significance. "We are not told," says Capt. Calver (Rejoinder, p. 35), "how this was done" (that is, how the sampling, giving 23·06 grains per gallon, was managed); "but from the times recorded against the samples in the table, it is plain enough that they were taken from inside the sluices instead of outside them, which ought to have been the case, and which would make all the difference." We leave the onus of this statement on the responsibility of the learned and gallant officer. It is clear that some explanation is required,—we might almost say that some dodge must have been practised,—to make any analyst come to the conclusion that the sewage of London is so extraordinarily diluted. Knowing, as we do, pretty nearly the quantity of water turned through the sewers, and knowing the number of human beings resident on the area sewered, it is very certain that if only 23·06 grains per gallon of solid matter run out into the Thames, a deposit of a very formidable nature must be taking place throughout the whole metropolitan system. Again we may ask,—Have we before us the professional reports of men anxious to emulate the fame of the great founders of the profession of civil engineers, or have we the shifts of a pettifogging cleverness, the successive arguments of defence on the pleas,—"1. The kettle was cracked when we received it; 2. The kettle was whole when we returned it; 3. We never had the kettle"?

Leaving, then, the argument from the microscope and the micrometric balance, let us for a moment call attention to a piece of straightforward evidence offered by Mr. Leach. It is not, of course, necessary to say a word by way of endorsing any statement made by the respectable engineer to the Thames Conservancy Board; but, as matter of fact, we have been for some time aware of the statistical fact cited in p. 5 of "Remarks." And we need hardly add that results taken in gross over a considerable period of time are at least as reliable as, and appeal much more directly to what we may call the jury common-sense of the English people than, those extracted from the laboratory of the most eminent chemist.

"The quantity of solid matter produced from the sewage of Birmingham, the area drained having a population of about 400,000, is found by measurement on the land on which it is placed to be about 450 cubic yards per day. The system of taking both house-drainage and rainfall into sewers, is the same here as in London. If the proportion of solids in the London sewage is the same, and it is reasonable to suppose that there is not much difference, upwards of 4,000 cubic yards of solid matter must pass into the Thames daily, the precipitation of the heavy particles of which is quite enough to account for the formation of shoals." Mr. Leach has, we observe, allowed for the lime used as a precipitant at Birmingham, which is from 15 to 20 cubic yards per diem. Making that allowance, and taking only the population of 3,808,174, which was supplied by the eight great water companies in 1877 (according to Dr. Meymott Tidy's figures in "The London Water Supply"), we arrive at 4,080 cubic yards of solid matter, which, one day with another, is either turned into the Thames at the outfalls or left to silt up the sewers of London.

With regard to the appearance of this deposit in the river, to which public attention has been called by the inquest on the sufferers on board the *Princess Alice*, some definite evidence is offered both by Mr. Leach and by Captain Calver. "In March, 1867," says the engineer to the Conservators, "a report was brought to this office that the ship *Kooria Mooria*, proceeding up the river in tow of a tug, grounded in mid-channel off the Crossness outfalls. An examination of the bed of the river was immediately made, in the expectation that only some local impediment would be found, but in doing this it was ascertained that where, in 1861, deep water and a gravel-bank had been met with, there was now an immense body of mud, thoroughly impregnated with sewage. Further surveys and examinations showed that the mud was not confined to that locality, but that it was to be met with in many other places, both higher up and lower down the river. Complaints came from wharfingers in the Pool representing the inconvenience to which they were subject owing to the enormous and unprecedented accumulations of mud in front of their wharfs. Similar deposits were noticed off Lambeth, near Waterloo Bridge, and elsewhere; whilst the bed formed in front of St. Thomas s Hospital caused great alarm to the authorities of that institution." Mr. Leach goes on to say,—we make the break because what has preceded is evidence, what follows is matter of opinion,—"It is only owing to the unusual quantity of land-water which has passed down the river during the last three or four years that these last-named evils have not recurred to so serious an extent."

Captain Burstal writes (Observations, p. 2), "The former deep-water channel immediately in front of the outfall works has silted up with black sewage mud, through which I have forced a pole 7 ft. before it touched the ground, which is the natural bed of the river; and this mud deposit is about three-quarters of a mile in length, and extends at least one-third of the way across the river." Captain Burstal can, no doubt, give dates and particulars of his soundings. They deserve careful attention, as the direct observations of a competent hydrographer and naval surveyor. How far this mudbank may shift, increasing in neaps and decreasing in springs, it is of primary importance to ascertain by continuous daily survey, kept up for at least a full lunation. [Distinguishing, as we did in the case of Mr. Leach, the evidence from the opinions of the Secretary of the Thames Conservators, we cite the remarks:—"Had not the north part of the river in this reach been deepened by dredging, I have no hesitation in stating that the sewage mud on the southern side, and the shoals off Dagenham Reach on the northern side, would, together, have formed a bar over which no vessel drawing over 8 ft. or 9 ft. of water, could have passed at low water ordinary spring tides. From what I have stated respecting the silting up of the river with sewage mud on the southern half of this reach, I must come to the conclusion that the navigation of this part of the river has been seriously impeded by the mudbanks thus formed, so that vessels of more than 8 ft. or 9 ft. draught of water cannot now navigate where they used to." Without going further into the details of obstructions at various spots, as to which we suppose that full and definite evidence will be forthcoming when required, we repeat the words of Capt. Calver,—"It does seem strange that Sir Joseph Bazalgette ventures to deny the recent formation of foul and offensive accretions in the bed of the Thames, when he is so well aware of what resulted formerly from the draining of a much smaller quantity of sewage along the frontage of the City."

We pause here. Details are not agreeable. But they are needed. Enough will be found in the pages of the four works we have cited, the 1st and 2nd Reports of Captain Calver, and the Remarks and Observations of Mr. Leach and Captain Burstal, to remove the question of the alarming injury daily inflicted on the Thames by the works of the Metropolitan Board from the region of doubt. A little more or a little less does not matter much. If we say that the sewage of London is 30 per cent. more diluted than that of Birmingham, we only reduce the 1,489,200 yards of sludge which, according to the experience of the engineers of the latter town, is now thrown daily into the Thames, to the million of cubic yards with which Sir J. Bazalgette credits the waste of the Saltings and the degradation of the Isle of Sheppey. If we go one by one through the "Conclusions" proposed by Messrs. Bazalgette, Law, and Chatterton, on 15th April last, we find that they will have thus to be modified, in order to meet the facts of the case.

1. That there is ample evidence to prove that foul and offensive accretions have recently formed, and are continually increasing within the channel of the Thames, notwithstanding the steady improvement in the channel of that river which has been effected, and is in progress, owing to the care of the Conservators.

2. That while the water of the river above London Bridge is far purer than was the case when the sewers were turned directly into that part of the river, it is still polluted by sewage, and banks of sewage mud form, from time to time, on many portions of the shore and bottom of the river that lie out of the main scour of the water.

3. That analysis shows that this offensive mud is very chiefly composed of the elements of sewage; and that such mud very rapidly forms and deposits in mass where obstacles are interposed to the course of the current, as in the case of the recent wreck of the *Princess Alice*.

4. That the opinion expressed by Sir Joseph Bazalgette, before the Institution of Civil Engineers, in 1865, to the effect that sewage thrown into the river at high water works its way up, as the tide strengthens, to a distance of from seven to nine miles, is fully confirmed by the observations and reports of the engineer of the Conservators of the Thames, and of the two naval hydrographers consulted by that body.

5. That although the Metropolitan Board of Works, as succeeding to the rights and duties of various Commissioners of Sewers, have been advised by their own officer that the banks of the Thames, in many parts, are being rapidly washed away, a result of a neglect of duty which legislation imposed on the said Commissioners, no notice of the fact has been taken by the Board, except in so far as to ascribe to the Thames Conservators the neglect of a duty which is not theirs.

By making the slight changes above indicated in the draft "Conclusions" of April 15, 1878, Sir Joseph Bazalgette will have the advantage of putting his report in harmony, not only with those of Capt. Calver, Mr. Leach, and Capt. Burstal, but at the same time with indisputable fact.

It will then remain to be seen how far the Metropolitan Board of Works are guided by reference to facts and not to imagination. Our own anticipations on that head may be,—and we should rejoice to find it the case,—proved to be unfounded and unjust. But in expectation of what may occur, we cannot do better than cite, with full assent, the words in which Capt. Calver concludes his temperate and conclusive report:—"It is in such cases as this, and others of a cognate order, involving, it may be, interests of the very highest public and even national importance, that the want of a scientific court for ultimate appeal is peculiarly felt. As matters stand at present, whether the reference be to arbitration, to a committee, or to a commission, the decision of a case too frequently depends, not so much upon its merits as upon the accidents of the official selection of the temporary judges, and the character of the advocacy on either side."

We have only further to call attention to a fact new to ourselves, and of which the importance is new to Capt. Calver. At the northern outfall, after the sluices are closed, a stream of sewage, amounting to 120 cubic feet per hour continues from the time the sluices are closed till about an hour's flood, or six hours per day. It is clear from our former remarks that at high water spring-tides the influence of that pernicious driblet will be felt at least twenty miles up the river above the outfall at Barking.

We may add that, while any complaint made by the Conservators of the Thames of obstructions will have to go before arbitrators, this is not the case with regard to complaints as to the nuisance of pollution.

HOW CAN STREET ARCHITECTURE BE BEST IMPROVED, WITH DUE REGARD TO ECONOMY?*

The subject of the improvement of street architecture came before the annual Congress of this Association two years ago, at the meeting held at Liverpool, when the section which undertakes to consider the artistic side of life was inaugurated. It might, perhaps, therefore, seem superfluous to bring it forward again at so short an interval; but I think there is sufficient reason for reopening the subject now, partly in the fact that the Local Committee of this Section expressed special interest in it; partly also that it is one of those subjects on which a great deal must be said, and said very often, before any appreciable effect is produced on the public mind; but more particularly because there is an essential distinction between the point of view from which the question was then considered and that from which I now propose to offer some suggestions,—a distinction which bears especially upon the social side of the subject.

The title of the subject proposed at the Liverpool meeting was "How Best to Secure the Improvement of Street Architecture, especially in Relation to Public Buildings." As a matter of fact, not much was said about public buildings, but this latter half of the sentence indicates the turn which the consideration of architectural improvement in houses almost always does take, that of the laying out and embellishment of the wealthier quarters of the city in the neighbourhood of, and in connexion with, its principal edifices. This tendency is the natural legacy of the past history of architecture, which has almost invariably been the plaything of the wealthiest and most powerful castes—religious, political, or social—of the community. We have had the architecture of temples and churches and palaces, of public buildings and of private mansions; we have had recently the street architecture of wealthy town residents and of successful tradesmen, and a very dreadful thing the latter often is in its glaring and costly self-assertion; but we have not in modern England realised any architectural beauty or expression for the many of lesser means who must live in crowded streets, and for whom anything that can be called noble or picturesque architecture seems to have been hitherto an impossibility. We have once had something like an architecture of the people, of which the remains are to be seen in picturesque country cottages in various localities, and in some of the old streets of such towns as Chester; but these are built in a style and in materials incompatible in many ways with the requirements of sanitary science and security from fire. But we are, as far as the present day is concerned, entirely without an architecture for the many; or, rather, our architecture for the many is only the negation of all architecture, the absence of anything which can give any grace or interest to the mass of buildings which the tendency to centralisation in towns renders yearly more formidable, but in regard to which it is at present matter for thankfulness if we can even get the most ordinary conditions of health observed; any attempt to render them beautiful or to diversify the monotony of their endless ranks seems to be regarded as out of the question.

Is it necessary to spend a word in urging that such an attempt is desirable? A few years ago it would not have been so; it would have been conceded on all hands that our average street architecture was grim and depressing in aspect, whatever might be thought as to the possibility of improving it. But it is one of the curious results of the manner in which recent criticism on these subjects has gone on refining, and turning everything inside out, that we seem to have arrived at a paradoxical faith which regards a building as the more artistic the less art there is in it. Having had two or three architectural revivals which have disappointed the hopes of their votaries, we are now asked to jump to the conclusion that all attempt at refined architectural embellishment is a mistake or a pretence, and that the perfection of architectural design is to do nothing at all. A worship of architectural commonplace has commenced. Great George-street, for instance, that brick avenue which is the paradise of engineers and Parliamentary lawyers, was adduced in my hearing the other day by an architect, as something which could not well be improved upon; and superior persons dwelling in Harley-street and other similar half-miles of Georgian brick tell me that nothing they see in modern architecture gives them such pure and lasting pleasure as the varied arrangements of the sash-bars in the fanlights over the street-doors; and I can testify that nothing seems to excite their indignation so much as the substitution of sheets of plate-glass for the old frames. It may be my phlegmatic temperament, but I am ashamed (or at least I obviously ought to be ashamed) to confess that these beauties of Georgian town architecture are thrown away upon me; that I can traverse Great George-street with no quickening of my architectural sympathies, save at the sight of Barry's clock-tower at the end of it; that the fan-lights of Harley-street and Gower-street leave me cold and unmoved. Fully concurring in the view which regards the revival of past architectural styles as essentially a mistake, I fail to see how we are to be bettered by reviving something which is no style at all. Looking at the fact that the Classic and Gothic revivals, whatever the mistakes and abuses inherent in such movements, have produced some really noble buildings and some graceful and picturesque domestic architecture, it is difficult to see that we are to gain anything by coming down to what common bricklayers and joiners could give us, by way of imparting reality to our modern architecture. If this were the only alternative, I would suggest that the old shams are better than the new realities. But I believe we are really in no such unhappy dilemma that we need lay aside all attempt to beautify our streets under the idea that it can only result in affectation. We have our own practical requirements, our own special economical problems, the solution of which in the best manner may furnish, as in other generations, the basis of our own architectural style; and as to the ornament and decoration, nature, the fountain-head of all decorative art, is as infinite and inexhaustible as ever.

Architecture, in short, has always had life and reality put into it when there was a new problem to solve. And here we have such a problem before us. We have to consider how we can, consistently with conditions of economy, bring architectural beauty and interest into those quarters of large towns in which it has hitherto been most neglected and most conspicuously absent, and to the dwellers in which it is of special importance. For the inhabitants of the less wealthy quarters of towns have little opportunity of change of scene in comparison with those who live in wealthier districts. The town furnishes the scenery of their life, and a miserable scenery it mostly is. It is taken as admitted that brick walls with square holes in them form the only order of architecture which is economically possible for buildings under a certain rental. And seeing how large a proportion numerically of the inhabitants of towns have to live among street-scenery such as this, if we can show that all this might be materially altered,—that beauty and variety, colour and sentiment, might be brought into now dull and lifeless streets, without more expense than is at present bestowed upon miles of blank brick wall,—we should surely be showing the way to an architectural improvement as important in itself and in its influence on the greatest happiness of the greatest number, as the building of town-halls, law-courts, or even cathedrals.

It is, of course, an essential condition of any such attempt to introduce a more artistic element into every-day street architecture, that the change should not involve any material addition to the cost of building. As it is, there is considerable difficulty in building houses of the class we are referring to so as to be remunerative in respect of the rents which can be obtained for them; and it is probable that at present any change in our building methods would be more valued by the majority of those concerned, for promising a saving of expense, than for any improvement in architectural effect which it might realise. The idea that town-streets must necessarily be ugly and dull is tacitly accepted, and no one thinks of making a protest against what seems inevitable. If, however, it is once discovered that improvement in this respect is practically possible, we may soon see a very great increase of interest in the subject on the part of tenants and householders; for, after all, very few people are contented with ugliness when they can get anything better, or anything which they think is better.

Now there is no doubt that a certain degree of improvement might be made even in the regulation brick street-front, by the exercise of a little thought. It is not necessary that a quarter of a mile of houses should be built as if all were cut in the same mould, or rather as if they were made by machinery, in lengths of a few miles at a time, and slices cut off and put down where they might be wanted. It is not necessary that all the houses in such a row should have windows of just the same size, so many holes in the wall cut just alike. A little grouping and variation in the size and spacing of the windows would go far to break the oppressive monotony of a long street; and some further variety might be obtained by variations in the character and quality of the brickwork; for instance, by using what is called English bond for the ground story and the usual Flemish bond for the upper stories, or by constructing one portion of the heights with bricks of different tone from the rest, so as to get some variation of tint. So far an improvement could be made, a certain degree of character imparted, with hardly an iota of extra expense. Some further relief to the front may be given, at a cost little more than nominal, by the employment of a band of moulded or stamped terra-cotta, or (with a slightly increased but still insignificant expenditure) by a band of moulded or otherwise ornamented brickwork. It is needless to say that there is now, architecturally speaking, every facility for very varied and high-class decorative building in brickwork; but all this is expensive,—in its best form, as expensive as stonework; and, therefore, it cannot enter into our consideration now. A considerable improvement in regard to character as well as constructive truthfulness would be obtained if builders could be persuaded to build the windows and doors in a genuine arch form, even of a small segment, instead of the disagreeable and weak-looking camber arch, which is their great delight; or if a straight window-head is desired (and undoubtedly it is the most convenient form practically) a concrete lintel would give some variety of surface and be more constructively satisfactory than the flat arch. A great deal has often been said about the sky-line of our streets, and how much even the plainest brick streets might be relieved and improved if the houses were roofed with gables fronting to the street; and so they unques-

* By Mr. H. Heathcote Statham. Read at the Cheltenham Congress of the Social Science Association (Art Section) on Thursday, the 24th inst.

tionably would be, but this is a more expensive way of roofing a row of houses, and leads to increased difficulty in regard to carrying off the rainwater. We find, therefore, that although it is possible to make some improvement in the ordinary brick street, and to give some variation of character to it, we can get a very little way towards anything like decorative building,—we are soon hopelessly pulled up at the boundaries of possible expenditure, and if we are to get any further in our endeavour to beautify, we must seek for some material, or method of building, less expensive than brick. Now brick is a cheap material enough in itself; the major part of the expenditure consists in the skilled labour necessary for putting it together properly. If we can get a material in which this source of expense is greatly lessened,—in which there is no need for the cutting and fitting and calculating necessary for the proper putting together of even a plain brick wall with square openings in it, even though the said material be no more beautful or enlivening in itself than brickwork, we may then obtain a margin of funds which can be expended in purely decorative treatment. Now such a material does present itself to us in the shape of concrete building, a method of construction about which a great deal has been said and written during the last few years, but which architects and their clients seem very much averse to take up or to give a fair trial to, though it certainly presents more resources for developing a new architectural effect combined with economy, than anything that is before the public at present.

In the form in which it has hitherto been most used, the principle of concrete building, it need hardly be observed, consists in defining the thickness of the intended wall by a temporary boarding on either side, and filling in the space between with the materials while in a wet state and leaving them to set, when the boarding is moved a stage higher and the next layer of concrete laid: the wall being thus, in fact, cast in a mould, the windows and other openings left by the interception of the material by cross-boarding where required. Of course, it must be admitted at once that such a system is necessarily more stubborn to deal with, in regard to any variety or intricacy in the main architectural design, than is one in which the materials can be put together in almost any way we please and the design easily altered or modified (if desired) as the work proceeds; and this fact must, I think, prevent concrete from ever competing with brick or stone in cases where expense is no object. Such cases, however, form decidedly the minority in ordinary building. It is quite possible, however, that the process of construction may be so modified as almost entirely to remove this drawback, and render concrete building as unhampered in regard to form as any other method. Apart from this question of the process, it appears to me that the results of even plain concrete building may compare with plain stone or brick, at all events with brick, without disadvantage. Concrete being essentially rubble walling on a small scale, that is, with rubble in very small pieces, its natural finish is of course rather rough, but I saw recently some cottages left in this state which looked just as agreeable in tone and texture of surface as ordinary brick walls, perhaps more so; and when the concrete has received the cement face which is its usual finish in the better class of work, the appearance is at all events more cheerful and enlivening for a town street, and less calculated to hold dust and dirt, than a brick wall. The point, however, which we want to arrive at is the degree of saving which can be effected in the shell of the building, and which, as before observed, can be expended upon actual decoration without an increase of cost over the ordinary plain brick front.

Upon this question very various opinions have been expressed, coloured partly, no doubt, by the interest of persons practically concerned in one or another material, partly by the conditions of different localities. Where the materials for concrete are immediately at hand, the concrete is sure to be much the cheapest; where they have to undergo a considerable amount of carriage, or where brick is made close at hand, the relative cost will, of course, be very much modified. On the whole, it may be said that the relative cost in London is a fair test, the locality not favouring either material particularly; and that the statistics of cost there are in favour of concrete there can be no reason for doubt. The other day I was inspecting a very neatly-finished little house in one of the suburbs of London, of which the external walls, including the outer finish of cement, were executed for 4s. 9d. per superficial yard, as against about 10s. per superficial yard for 14-in. brickwork, pointed on the exterior; and the internal cross-walls, left unfinished for plastering, can be executed for 2s. 9d. per yard, as against about 6s. per yard for 9-in. brickwork unpointed. This, you see, is less than half; but a percentage must, no doubt, be allowed for the fact that the builder was working for himself in this case. But even allowing him the liberal profit of 20 per cent. (and though contractors are much better off than architects, I do not think they make that as a rule), the cost is considerably under two-thirds of brickwork. But to be quite reasonable in our expectations, we will say two-thirds. Now, if we calculate the difference upon a small street-house of the middle-class of dwelling, say about twelve yards above the ground by five yards and a half frontage by eleven yards in depth, with the average amount of internal cross walls: taking the saving on the front and back walls at 3s. 2d. per superficial yard, and that on the party-walls and cross-walls at 2s. per yard, including cellars; allowing also for a saving of about 6d. per yard over the whole interior (except cellars), by the dispensing with one coat of plaster, we get in round numbers a saving of about 100*l.* per house to make ducks and drakes with in the way of decoration. And now the question is, what to do with it,—how best to employ it?

It is easiest, in the first place, perhaps, to settle what not to do. The builders and the companies who are interested in promoting concrete building have taken that trouble off our hands; for if anything could render the system odious in the eyes of all people of artistic feeling, it would be the sight of the horrible things which these gentlemen erect as "handsome" houses, and of which they show you photographs which they seem to regard as sufficient at once to convert you to concrete building. If they knew their own interests they would keep the photographs of their neat and desirable residences carefully out of sight, for fear of creating a pardonable scare in regard to the new method of building. The air of vulgar respectability, if one may say so, which characterises them is partly due, no doubt, to the fact that they are usually the work of persons untrained in refinements of architectural detail and expression; either of the builder's own clerk, or of the kind of architect (or *h*architect) who is not unfrequently kept by a builder. With one exception, to be mentioned just now, I believe no architect of genius has allied himself with concrete in any shape, as yet; and though we are often told there is no architecture now, and that it is all imitation, yet there is a sort of distinction between the work of an educated and of an uneducated imitator. But the cause of failure really lies deeper than that; it lies in the want of perception that a special material, differing in character from those hitherto used, requires a special treatment. The only idea of the ordinary designer of a concrete house is to make it like a stone house, and to employ the usual features which are considered proper to respectable stone houses: pilasters, moulded capitals, panels, brackets, keystones, consoles, and all the rest of it; to treat it as if it were built up in pieces like stone, and to affix upon the surface of the walls imitations of stone detail. Nothing that is real—nothing that appeals to a genuine artistic sense, can be done in that way. The first point is to recognise the real nature of the material and the method of treatment to which it will lend itself. A concrete house on the usual method of construction is essentially monolithic. It is true that it is necessarily cast in stages, and I have thought that in the case of cottages built as cheaply as possible, and left rough, an agreeable effect might be produced by varying the materials so as to get a slightly varied tone in the alternate layers. But in a concrete house as finished for the better class of work, even this slight indication of horizontal layers disappears in the finishing, and the building becomes a uniform surface. Instead, therefore, of trying to make it a masonic design, and planting on the cement projections to be fashioned into the likeness of masonic detail, why not recognise the material for what it really is, namely, an admirable "vehicle" (to borrow a painter's expression) for surface decoration.

In considering what we can afford to do in this way, it must be remembered that in a street-house we have, architecturally, only the front and back walls to consider, and practically it comes, in most situations, chiefly to the front wall; for, though it is certainly a mistake, and under some circumstances even a vulgarity, to neglect entirely the decoration of a house and make a great show in front, on the other hand it is unquestionably part of the amenity of architecture, regarded in a social point of view, to turn its best face to the public; in other words, to develop its best beauties where the most people can see and enjoy them, just as we ourselves, or the better half of us at any rate, endeavour to put on our best appearance when we go to a public entertainment. Now, looking at it in this light, and concentrating our efforts on the street-front, the amount I have supposed to be saved on the shell of the house would enable us to cover half the front with original decorative design in such a material as Rust's mosaic, a material furnishing not only an indestructible design, but giving colour and texture of a very rich and harmonious description; or it would enable us to decorate the front with original design in *sgraffito*, a process which, though not affording colour, gives variety of tone, and has the merit of combining remarkably well, in regard to material and appearance, with concrete. Many more suggestions might be made for giving a varied decoration to the surface, some of them at much less expense than the processes just named. Coloured tile designs may be incorporated in the face of the walls; and terra-cotta, such as Doulton's, with its beautiful tones and rich surfaces, may be used to give an almost jewelled effect of colour and surface of the most permanent description. But stress is laid here upon the possibility of introducing such materials as mosaic and *sgraffito*, because they bring us clear of the system of mechanically-repeated ornament, and presuppose a design which varies with the individuality or the feeling of the designer in each case, and in which no saving is effected by mechanical reproduction and multiplication of the design.*

The importance of this last point can hardly be over-estimated; for those who would deprecate any attempt to ornament our streets have at least this to say on their side, that it is better to give up any pretence of it unless we are to have as decoration something that we really care for, and that is designed and put up for love of it, and not to look "handsome." And who in the world is the happier for cast ornamental brackets or keystones catalogued at 15s. 9d. a-piece, or nail-headed or toothed bricks at so much per foot run? There is something in a good moulding, for the play of light and shade which gives it effect comes from Nature herself, and varies with the varying atmosphere; and there are certain conventional architectural ornaments, chiefly Greek, the absolute purity of taste in which seems to keep them from ever getting antiquated; but these we seldom see in mechanically-produced work, and never executed with the refinement of modelling which they demand. What we do get are clumsy reminiscences of Classic detail (generally), hackneyed out of all endurableness by eternal repetition. The attempts which have been made to decorate the large stacks of model dwellings which are now becoming a feature in some of our towns, are simply deplorable in their weakness and vulgarity. In London, there are uncouth features, horrible panels with a lozenge-shaped hole in the middle, and weak-looking brackets ornamented with round holes cut on them, which have absolutely been multiplied by hundreds, not to say thousands, and put on to model dwellings to beautify them. Better the plainest and most dingy wall than this kind of trade decoration. What we want above all in the decorative treatment of town architecture, and more especially in the poorer and less inviting localities of large towns, is that some reminiscences or suggestion of the life and colour of Nature should brighten the walls. One of the most gifted of contemporary landscape-painters, who has the additional merit of being one of the most agreeably cynical of talkers, was stigmatising architecture to me as uninteresting the other day, when I asked him if there were no interest, at any rate, in architectural ornament?

* In regard to *sgraffito*, it is now even possible for the architect to draw the decoration on the material, with his own hands, in his studio, and then send it to be fixed in the building, as panels or pieces prepared for *sgraffito* can be fixed on a perfectly rigid framing incorporated with the plaster, and can thus be easily moved from place to place. This method of preparing *sgraffito* ground is due to Messrs. Trollope & Sons.

"Ah, yes," he said, "a great deal; it takes a landscape-painter to do that!" Now, without entirely adopting this view, is there not something significant in the remark? Do we not really want, in the decoration of town architecture, and of the poorer and less inviting quarters particularly, that kind of decoration of which it might be said that something of the landscape-painter is required to design it, at least some of that direct and living study from Nature, whereby something of her life and colour and infinite form should be brought to enliven the dead walls of our streets? And that can only be accomplished in materials which allow in each instance of individual thought and individual modelling. Nothing out of a pattern-book will do it. But with materials such as those named, and others which have the same kind of capabilities, why should not the front of even our smaller street-houses present examples of artistic beauty as original and real as any of those which are put into sketch-books to be "cribbed" from, and at least of more interest than the cut-brick festoons and ornamental pepper-boxes which are the staple of decoration in the revived brick style named after Queen Anne?

What is important also to note is that a fresh return to Nature for architectural ornament, and a means of carrying it out so as to exhibit the individuality of the worker, would be the best means of escape from the mistaken effort to secure the picturesque by taking up some former fashion of picturesque building,—a mistake especially to be guarded against in the treatment of new material. For example, a very pretty illustrated book has lately been put forth by a large contractor, Mr. Lascelles, who has patented a new process of building with cement slabs on timber framing; a very good and inexpensive process for country cottages, *not* for towns. He has secured the assistance of a most talented architect, of whom I would certainly say no word of disrespect, and felicitates himself on having made cement construction picturesque, which appears to mean that he has contrived to have the slabs of cement made and tinted so as to produce what a copyright lawyer would call a "colourable imitation" of a style of old cottage, common in some parts of the country. *That* is not the way to treat a new material. Produce the best effect you can with it by the readiest means, but do not try to make it mimic something else which you choose to consider picturesque. The picturesque, in the ordinary sense of the word, cannot be cooked; it is, in great part, a matter of time and age, and people who admire these old buildings, and immediately wish to do something like them, quite forget, apparently, that they were all new once.

I have made concrete-building the main object of these remarks, believing that it is a process with a future before it, and that it is more likely to afford a chance for economically improving middle and lower class street-architecture than anything which we have before us at present. Of course, where cost is of less importance, the same processes of decoration may be applied to a brick building, though I cannot help thinking they would, as a matter of appearance, blend even better with a concrete face. There is, however, a method of high-class decoration, terra-cotta modelling, which goes admirably with brickwork, and in which a frieze of figures, or other studies from nature, may be sketched out and fixed by the fire, so as to stereotype permanently the idea expressed in the clay, in all the freshness and freedom of the first impulse of designing.* Not a few amateurs of artistic talent are devoting their attention to this art; those who succeed could hardly turn their gift to better account than by bringing such decoration to neighbourhoods where there are no means of purchasing it; a kind of charity which "blesseth him that gives and him that takes" in a way that charity expressed in coin seldom does.

An important practical point, but which has also its æsthetic bearing, in regard to concrete, is its use in roofing. One of the first desiderata towards a complete and truly architectural style of building is the obtaining of a homogeneous character in walls and roof, as was done in the case of Gothic vaulting, where the roof is only the walls closing in and meeting overhead. No great building is really monumental in style unless this homogeneous construction is attained. As to the effect upon towns of having to put a timber covering on the top of the solid walls, and then to tile or slate over that, independently of the greatly added risk from fire, let any one who has entered any of our large towns on a railway viaduct over the tops of the houses recall the indescribable effect of higgledy-piggledy and lumber produced by this mass of roofs leaning and sagging against one another, and full of places out of repair in the roof or tile covering. Compare this mass of material, and all the rottenness and dirt and decay which it inevitably contains, with the effect as it would be with nothing but smooth cemented concrete roofs, absolutely permanent and unchangeable in form, with domed or arched surfaces of monolithic character, and capable, from their smooth and hard surface, of being washed clean by every rain, and some idea may be entertained of the desirable change which would result from the adoption of such material for roofing. There is another advantage, which also has its æsthetic as well as its practical side, in the facility with which flat roofs may be made perfectly impervious to wet, in concrete and cement. Now, flat roofs in a crowded town would in some points be a great advantage; they might afford either airing-space or drying-ground for linen, or, which would be a preferable use, an opportunity for getting more air than can be got below, and an outlook beyond the confines of the street, or they might even afford opportunity for gardens and conservatories. And another advantage which has often occurred to me in such a construction is this: that a single row of (say) two-storied houses may be built along a new street, and that when in process of time there came a demand for more house accommodation in the neighbourhood, a second set of tenements could be built on the top of the first, what was the roof of the lower set furnishing the ground-floor of the upper set; a method which would allow of leaving proportionably wider streets, and not crowding houses together so much on the ground. But the great advantage of the concrete roof is, after all, its permanent and solid character. Nowhere is it so important to avoid anything like rickety building as in crowded towns; and nowhere, at present, is there so much of it.

In regard to this same question of rickety buildings, there is one class of erection which is a special nuisance in our towns—the shop-front. It is a curious instance of the bearing of social habits upon architecture, that the desire on the part of tradesmen to cut one another out in the way of outward show and display leads to architectural treatment equally pretentious and unstable. A wide space for a display in the window is the first desideratum: consequently the whole of the superstructure is made to stand apparently on a sheet of plate-glass, and is in reality anything but sound architectural construction, since it involves a system of balancing the building on points on which a great pressure comes, while the supports are inadequate to resist properly the disturbing effect of unequal loading, or of any slight settlement in the foundations. Architecturally speaking, however, the more prominent fault in shop architecture consists in the almost universal addition of a species of joiner's scenery planted on round the window, with a wooden cornice and other supposed ornaments which are a mere excrescence on the real building, are of no use, cost a good deal of money, and absolutely preclude anything like dignified or solid architectural effect. No street can look otherwise than flimsy or tawdry in its effect when its base is lined by these useless pieces of painted show; but it would hardly be possible to legislate against them. Their abandonment must be left to the gradual influence of public taste, coupled (let us hope) with the gradual appreciation by the trading class of the fact that genuine excellence is better than show, and pays better in every way in the long run; under which faith the sham and the show of the shop-front would no longer be required. Among other minor causes of "complaining in our streets" may be named the chimneys and the rain-spouts. The disfigurement from the chimneys arises (like so many other ugly things in architecture) almost entirely from practical deficiency in construction, leading to bad draught, or down-draught, which has to be corrected as far as possible by the addition of grotesque spouts and cowls; otherwise the chimneys in street houses are usually pretty well out of sight, and only require a simple and unpretending treatment. In regard to the rain-spouts, it is curious that though we have for generations, if not for centuries, substituted these rain-conductors for the old contrivance of open spouts carrying the water out clear of the houses in a cataract, there has never yet been any attempt at providing for them in the architectural design of street houses, so as to make them appear as necessary portions of the architectural economy of the front. They are still hung against the wall as if no one had ever thought of them until the last minute of putting the roof on, and they had to be got in somehow. While we are speaking of details, it may be observed that, on the other hand, the entrance-doors of houses offer a very suitable opportunity for a little variety in character and colour, at present totally neglected in most street buildings; all the doors are made alike in a row of houses, as if cast in a mould, though as each is really a separately executed piece of work, it ought not to be difficult to vary them. Each entrance should, as far as possible, have a character of its own, so that the tenant may recognise his home by its own features, not merely by the fact of its being No. So-and-so in the row, even if there be no other distinctive decorative treatment. This kind of variety, as well as other distinctive character arising from varied decoration, may be attained without necessarily demanding that every house should be different in height from, and quite independent of, those contiguous to it. I confess I am not in entire sympathy with the denunciations that are sometimes made against the grouping of houses in a terrace in one design. If the houses were each built separately, by separate owners, it would be natural for each man to build as he himself wished, and the resulting variety in heights and details would be the natural architectural expression of the whole under the circumstances. But if the houses of a terrace, though separate tenements, are built at the same time by the same person, it would seem to me perfectly natural that he should build them with a general uniformity, and that to studiously vary the heights (for example) in each case, to make them assume the picturesque inequality of an old street in which the houses have grown up by degrees and at various periods, would be a piece of affectation. The details may and ought to be varied, as before observed, to prevent monotony and give a certain individual character to each tenement.

This latter consideration naturally suggests a word, before concluding, on the question of the relation between building legislation and architecture,—a question which is of some special interest just now, because it is pretty evident that the architecturally-minded portion of society will not put up with the average style of existing Building Acts much longer. The matter, however, so far as regards the artistic side of building, is really less complicated than some people seem to suppose. The improvements required in regard to this part of the subject are chiefly negative, and consist in letting well alone. At present there is no doubt whatever that street architecture in London and other large towns, suffers, as far as regards effect, from being too much governed. If we take a view of a picturesque street or building of old time, such as the modern architect or artist delights to sketch, and apply to it the provisions of (say) the Metropolitan Building Act, we shall find in most cases that nearly all which made the picturesque of it has disappeared. The effect of the average modern Building Act on street architecture is pretty much the same as would be the effect on the human countenance if it were decreed that all projections were to be cut off and the face kept flat. The Metropolitan Building Act actually does rule this, and though the real object is to prevent projections which may be suffered to be dangerous or injurious to the public, the regulations are often carried out in such a spirit of red tape that any one wishing to build out a projection of 2 in., in a manner perfectly harmless, but against the letter of the law, may find the prohibition enforced as rigorously as if life and limb were threatened by the irregularity. The consideration of architectural effect, in fact, does not enter into the legal or official mind. In the voluminous Blue-book of evidence taken by a Parliamentary Commission three or four years ago, when there was an attempt to get a new Building Act for London,

* The system of modelling in parget, which has been partially revived recently, allows of this advantage without the necessity of burning afterwards. The tone of the parget surface is not so rich as that of terra cotta, but the modeller has perhaps more absolute control over the effect.

I have not been able to find a single question out of the thousands asked, framed to elicit any opinion as to the effect of the proposed legislation on buildings architecturally. And it may be admitted that it is in no way desirable that any positive legislation on the subject should take place, and that those who build street-houses should be compelled to satisfy an official committee of taste with their designs, or should lie under the liability of having their drawings sent back to them to be made beautiful, All that we can reasonably ask of the law is. that it should leave the architect more untrammelled, and that it should forbear to place upon town architecture restrictions which must tend to rob it of half its life and character. Many things which are commonly forbidden by Building Acts are only really objectionable when they are badly carried out and of unscientific construction: the projection of an upper story of a building, for instance, beyond the lower, often a source both of convenience and of charming effect, is only dangerous or objectionable when badly carried out in regard to construction. To ensure a character of town-building at once safe and picturesque, what is wanted is not a stringent prohibitive legislation, repressing the life and character of street-architecture; but rather a legislation which would provide that the task should be undertaken by properly competent and conscientious persons; which would put a check on the iniquities of the "jerry builder" (who is the cause of the existence of nine-tenths of every Building Act), and at the same time leave the competent and conscientious constructor room to carry out his ideas without vexatious interference, and to indulge his fancy in regard to picturesque effect, in the confidence that such fancies would be carried out on the basis of a sound and scientific construction.

A MODEL BAVARIAN VILLAGE.

In the year 1865 a fire destroyed the larger part of the village of Oberstdorf. It may be well, first of all, to explain where this place lies. A main line of railway runs nearly west and east from the Lake of Constance to Munich. At Immenstadt, about a couple of hours from the lake, a small line branches off to the southward up the valley of the Iller to Sonthofen, and seven miles further up this valley, quite at its end, is Oberstdorf. It lies in fertile meadows, surrounded on the south by a semicircle of lofty and rugged mountains, the cluster of the Alps which we know as the Algäuer Alps, whilst east and west the spurs of these high mountains close in the valley. It would be hard to find a place more strikingly or picturesquely situated, and it says a great deal for the railway progress on the Continent that it is now within so short a distance of a railway-station. In its own way it is an important place, for it forms the market town,—one may almost say the metropolis,—for the inhabitants of the various hamlets which are hidden within the pine-clad recesses of the neighbouring valleys.

Most of the houses which escaped the disastrous fire of 1865 are very old; some were built two and three hundred years ago, for almost every house has upon it the date at which it was erected. Indeed, it is no extraordinary thing to find in out-of-the-way Austrian and Bavarian villages among the Eastern Alps wood and iron work which, if offered for sale in Wardour-street, would be eagerly purchased by those who are in love with ancient buildings and furniture. Thus, to give the first example which comes to mind, there is a village in the Lech Thal, in Tyrol, where the Gasthaus zur Post possesses a room, on the curiously-carved woodwork of which is the date 1656, and this is only one instance among many. And there is no reason why a hundred years hence a traveller in those sequestered places should not find such a house in much the same state as does the traveller of to-day.

But to return to Oberstdorf. In consequence of the fire the village was to a great extent rebuilt, and it thus offers a very excellent example of a modern and model Bavarian village; for there is no doubt that among the mountains greater taste is shown in the adornment of the people's dwellings, and in the execution of the woodwork, than is seen in the more prosaic plains. The houses are to the extent of about three-fourths built wholly of wood, and are uniformly larger than in most of the surrounding villages. They are oblong in shape, measuring across the front on an average about 33 ft., and are in length about double that distance. They are two-storied as a rule, with generally some kind of attic in addition. Behind, and forming part of the same building, are the cart-shed, the cow-house, and the hay-loft, which, even when the whole or the lower part of the house is constructed of stone, are made wholly of wood. The rooms generally are large in size, and in some cases there is quite an entrance-hall. The roof overhangs the walls very considerably, and is generally constructed, if the paradox may be permitted, of wooden slates. The taste and the wealth,—if wealth can be considered to be found in these penurious places,—of the owner are shown in the carving and execution of his balconies, his doors, and the upper part of the front, which in many cases show great taste and very considerable labour. But seldom does one house contain one family only, for they are generally inhabited by two or three. But in any case the dwelling is one which the English peasant or the inhabitant of a small house in a back street in an English town would greatly envy. And with their bright green shutters, with the carnations and the geraniums gleaming over the balconies, or, in other cases, with the rich brown of their woodwork, they have a most bright and homely appearance. The peasant of the Eastern Alps is in many respects much to be pitied. He is born to a life of toil; he has to labour incessantly throughout the summer to bring in his crops of hay; and in the winter both he and his cattle can barely subsist until the May sun melts away the snow from the mountain pastures. But he is, on the other hand, well housed; he takes a pride in his dwelling, and, owning his own house, he seldom has a landlord who can dismiss him at a week's notice. All around is abundance of wood with which to add to, improve, or to repair his dwelling, and to serve as fuel for his fire; and his house is built, even though it be only of timber, so massively that it would outlast by many years the slight structures of more civilised districts or more wealthy lands. In Oberstdorf modern ideas are most prominently shown in the regularity with which the houses are built in streets, but, unlike streets in English villages, each house is some distance from the other, and is surrounded by a little plot of land, which is a piece of pasturage for the cows when not out on the mountain side, and in other cases forms a little garden or a bit of land for potatoes or oats, and the slightly-gabled roofs give a great picturesqueness to the general appearance of the village. Simplicity, solidity, and picturesqueness are the main features of the houses of Oberstdorf, and it would be well if the same could be said of villages in our own more wealthy country. Thus, though we may wander among the Alps to view Nature in her grandest forms, or to be strengthened by the invigorating air, it is quite certain that from such villages as that of Oberstdorf lessons may be learned and suggestions formed which would not be useless in regard to domestic architecture in England.

THE TENDENCY OF TRAVEL.

One of the most curious phases of railway travel is the continuous gravitation towards the lowest level or class. As the railway system is extended there is a continuous increase in the volume of passenger traffic, but the rate of increase is very different in the three classes of passengers; and whenever a season of trading dulness sets in the increase is almost entirely in the lowest class. In some districts and on some systems of railway, there is a variation from the general experience; but usually the falling off is most marked in the intermediate class, as may be shown by a few instances. Even on the southern lines, which have had their passenger traffic swollen by that to the Paris Exhibition, there is observable this tendency in travel. Over the London, Chatham, and Dover line, in six months, more than 12,000,000 passengers travel, and the great bulk of them travel third class, as may be seen by the comparison of the numbers for the first half of this year and the first half of last year, the numbers of the travellers and their classes being as under for the two periods of six months:—

	1877.		1878.
First class	1,158,174	...	1,148,164
Second class ...	1,325,162	...	1,372,910
Third class	8,952,039	...	9,759,179

There is on this line a falling off in the number of first-class passengers, a very small increase in the second class, and a large increase in the third-class passengers. Taking another line,—the South-Eastern,—we have a similar state of affairs, the numbers for the same two periods being:—

	1877.		1878.
First class	1,026,418	...	996,023
Second class ...	1,341,934	...	1,355,839
Third class	8,918,299	...	9,509,738

And on the Brighton line the result is the same, the traffic having gravitated downwards from the first class, slightly increased the number of second-class travellers, and having the great bulk deposited in the lowest level. In companies serving a different district, the testimony is similar; in proof of which the experience of the Manchester, Sheffield, and Lincolnshire Railway may be cited. On that railway the numbers of travellers for the two periods of six months previously referred to were as under:—

	1877.		1878.
First class	211,985	...	199,591
Second class ...	338,931	...	305,210
Third class	4,573,513	...	4,624,914

In this case there is a falling off in both the upper classes of travellers, and this is an experience that is by no means singular in the Northern and manufacturing districts; indeed, it is the second class which suffers most in these districts. Taking the North-Eastern Railway as the type of those which have felt the most keenly the trading dulness, we shall find one of the exceptional instances in which there is not only a fall in the two upper, but in all the three classes; but even here the rate of the declension is by far the greatest in the two upper classes. On the North-Eastern, for the same two half-years, the number of passengers and their classes were.—

	1877.		1878.
First class.....	549,640	...	501,191
Second class.....	843,621	...	739,765
Third class	11,795,042	...	11,686,454

And in the case of the greatest of our British railways, the London and North-Western, we have the following as its experience for the same two periods of six months:—

	1877.		1878.
First class	1,524,020	...	1,408,706
Second class.....	2,741,752	...	2,459,619
Third class	17,832,726	...	18,268,149

Here there is a small decrease in the first-class passengers; a much larger decrease, both actual and comparative, in the numbers of the second-class; and in the third-class there is a very considerable increase. Taking, again, another typical railway, the Great Northern, which is very largely a passenger line, we have a variation in the experience, the numbers being for the two half-years:—

	1877.		1878.
First class	509,833	...	526,121
Second class ...	1,108,895	...	1,199,680
Third class	6,838,121	...	7,281,384

This general increase is in part attributable to the opening out of new branches, and in part possibly to the traffic to the Paris Exhibition. Last, may be noticed the Midland Railway, which occupies a rather peculiar position, owing to its working its traffic with two classes only. Its numbers are:—

	1877.		1878.
First class ...	1,235,897	...	1,150,926
Third class ...	11,537,552	...	11,326,754

Generally speaking, it may be said that although numbers are only referred to in the above tabulations, yet the monetary receipts show the same gravitation towards the lowest level; that is to say, that an increasing portion of the gross receipts from ordinary passenger traffic is derived from the third class. Indeed, in this respect the change is frequently more marked, for the longer journeys are those which are travelled by the lowest classes, whilst for the highest class, the short journeys are most frequent. The whole tendency of the figures quoted, which represent the experience of most of the chief railways in England, is to prove that the value of the traffic is being reduced more than the volume; the new traffic brought on the opening out of fresh branches is chiefly of the third class, and this and the gravitation on the old traffic causes the rate of the descent to be greater than it was. It is too soon as yet to decide as to the final effect of this change; for a return to prosperity might check it; but unquestionably the deduction which might be most safely drawn at the present time is in favour of the supposition that, to lessen working expenses, there would be the abolition of one of the upper classes on other railways than the Midland.

METROPOLITAN WATER SUPPLY.

After a lively debate, in which the reasoning was on one side, and the dead silent weight of the majority on the other, the Metropolitan Board of Works have given directions for lodging Parliamentary notices for application next season for a Bill for the compulsory purchase of the works and property of the Metropolitan water companies.

Those persons who are most anxious for reform and amendment in the character of the Metropolitan water supply will be the first to condemn the random and headlong proceeding of the Board of Works. The Works Committee, to which the question had been referred for report, virtually recommended that nothing be done in the matter. Dr. Brewer expressed the sensible opinion that they were bound to adopt the report of the committee, a reference to which would otherwise prove to be a mere pretext. Mr. Reche, however, argued that as the committee had done nothing, "it was not for the Board to abdicate their functions." [So far, however, from having done nothing, the committee had given their advice. How sound that advice was is evident from the motion of Mr. Runtz, who has hitherto been one of the foremost advocates of a bold and active policy, that "no action be taken by the Board towards obtaining power to acquire the undertakings of the Metropolitan water companies until the views of her Majesty's Government on the subject have been ascertained." It is admitted on all hands that the matter is not one that can be carried without the assent, and something more than the assent, of the Government. That such assent is more than doubtful is pretty clear from what took place last session. And one consideration renders it certain that the consent of the Government will not be surprised. That is, that one result of transferring the powers of the various water companies to the Metropolitan Board of Works would be to extend the jurisdiction of that body from an area of little more than 75,000 acres to an area of upwards of 340,000 acres. To go to the expense of notices for lodging a Bill, of which such a tremendous change is only one of the incidents, without taking the pains to ascertain how it is regarded by the Government, is a step which it is complimentary to call indiscreet. Mr. Leslie plainly called the proceeding "a sham." It is a costly sham for the ratepayers. If the water companies desired to escape from all notice, check, or control, they could not do better than encourage the proposal of raw, undigested, impossible schemes, full of sound and [promise, and certain to collapse under the pressure of actual Parliamentary business. On the other hand, the ratepayers may view, with some indignation, the constant calls upon their pockets for the ventilation of schemes which may pay the promoters and officials very lucratively, but which seem to have no other recommendation. At all events, no argument in favour of the measure was offered by the members of the majority, who took this new occasion of showing that they were "not afraid of expense,"—if it only fell on the ratepayers. Those of us who happen to be ratepayers hardly admire this vicarious generosity.

GREEK ART.

On Saturday evening last, Mr. C. T. Newton, C.B., of the British Museum, resumed his lectures on Greek Art, at the College for Men and Women, Bloomsbury, taking for his subject "The Frieze of the Parthenon." The previous lectures have been reported in the *Builder*.

Mr. Newton commenced by saying that about a twelvemonth ago he gave a lecture, of which the present was in some sort a continuation, and he then expressed his regret that circumstances would prevent him going on with that course for some time to come. This hindrance having ceased, he hoped in the course of this winter to get a little further on in his subject. Some of them would remember something of that last lecture, in which he endeavoured to trace the history of Greek art onwards, from the earliest times down to the period of Phidias, and he had just got on the very threshold of that part of the subject of the age of Phidias when he was interrupted. He in that lecture described the Acropolis of Athens, and pointed out what were the more remarkable temples and other buildings on the Acropolis, drawing especial attention to the Parthenon, of which he also had to speak that evening. He would only just remind them that the Parthenon was a Doric temple, the ruins of which still stood on the Acropolis. It was remarkable, not only for the beauty of its architecture, but for the extraordinary richness and variety of its sculptural decorations, which were of several kinds. First, there was the famous statue to the goddess Athene herself, in gold and ivory, which stood in the interior of the temple; then there were the great sculptures in the round, one or two pediment sculptures, the remains of which were very much shattered, and were placed in the British Museum. The sculptures to which he would now draw attention were two great pedimental compositions on the east and on the west end of the Parthenon. Outside the building, immediately below were what were called metopes, which filled the spaces between the triglyphs on a Doric frieze. These were sculptures in the round. Originally there were ninety-two, but now he was afraid there were not more than twenty, and of these he would lecture upon on a future occasion.

What he had to deal with that evening was the frieze. The frieze in a Greek building might be described as that portion which intervened between the architrave and the cornice on the outside of the building, and which crowned the wall on the inside. In a Doric temple there was no frieze between the architrave and the cornice. As to the frieze of the Parthenon, he must tell them at the outset that he would have great difficulty in explaining it to them on account of the mutilated condition in which it had come down to them. In regard to the history of this frieze, there was a time, of course, in the Middle Ages, when the Parthenon was a Christian Church, when he supposed that this frieze was perfect—running all round. There might have been 600 ft. of it about that time; but about the year 1656 there happened a most disastrous event, viz., the siege of Athens in the time of the Venetians, when the Turks held the Acropolis as a fortress. The Venetians besieged it, and owing to the fall of a shell the powder-magazine exploded, causing the destruction of a great portion of the northern part of the building, which caused an irrecoverable loss of portions of the frieze. After Athens became known to travellers about the middle of the last century they visited this place, and he was sorry to say that they indulged in the propensity, not unknown to British and other tourists, of chipping off pieces of the frieze in order to carry them away, and consequently several slabs on the eastern side of the Parthenon had been nearly destroyed. That destruction was going on until the French ambassador carried away one piece of the frieze, and Lord Elgin, who was then acting as English ambassador, took away a good deal of the remainder. He left, however, the western frieze intact upon the building, where it was to this day. A great deal of the frieze was then underground, and was never discovered till the great clearing of the Acropolis about the year 1833. After the Greeks took possession of Athens, they removed all ruins of the Turkish fortress, and dug till they came to the rock, and in the course of their excavations they found pieces of the most beautiful frieze we had, besides a great number of fragments which remained little noticed for years. He (Mr. Newton) visited Athens in 1852, and in consequence of the representations he made, the Trustees of the British Museum were induced to have casts made of portions of these fragments which were sent over to England, but nothing more was done to identify the fragments on the frieze for many years. About five years ago Professor Michaelis, of Strasburg, published a work in connexion with the Parthenon, which showed the utmost learning, research, and admirable judgment, and that it was not better known was only a proof how little archæology was cultivated in this country. He (Mr. Newton) strongly recommended them to take the atlas of that work and confront it with the marbles themselves in the Elgin room, and they would find in that atlas a combination of the marvellous which they had in the British Museum, and of the marvellous which existed at Athens last year. These drawings were made before the explosion of the powder, magazine in 1656, and, slight and careless as they were, they were most precious, telling them in the first place of the component parts of this frieze, and of the order in which these pieces came. An entire view of the frieze was given, so far as it could be obtained from the combination of drawings. There were, however, a few fragments which were not identified, and he had made an examination at the British Museum, and had succeeded in finding places for several of the fragments. From time to time they had little windfalls in regard to the discovery of the fragments. A fragment was some time back discovered in Cheshire, and the owner generously gave it up, and it was fitted on to the frieze. Another fragment was given to the British Museum, many years ago, by the Dilettanti Society. He could not give them a complete illustrated account of the frieze, because the space on the wall for his drawings was not large enough, but he would give them a selection from each side of the frieze. As to the subject of the frieze, he thought they could have no manner of doubt that it was the Panathenaic procession, which was a festival held in honour of the goddess Athene, and every five years it was celebrated with all possible solemnity, with the usual accompaniments of contests,—gymnastics, horse-racing, chariot-racing, and music. Its principal feature was the procession to Athene, the goddess, to whom a veil was offered. The Greeks had an idea that their tutelary goddess would be very well pleased with a birthday present, and this veil was the birthday present of Athene, and upon that day this veil was carried in solemn procession all through the town up to the Acropolis, and finally offered to the goddess, not in the Parthenon, but in the older temple, the Erechtheum, where she had her own shrine conjointly with Erechtheus. This procession consisted of cavalry, chariots, old men who carried boughs, while others carried sacred vessels belonging to the treasury of the goddess. All these things they would find in the excellent remains of this frieze. It was not to be supposed that they had a literal transcription of the procession, but there was such a representation of it as served at once to recall it to the mind of the devout Athenian. In the original procession, the persons who were to take part assembled in the suburb of Athens, the veil was put upon a ship, and afterwards carried through the town up to the Acropolis. This feature would not be found in the frieze, for the ships and the sea were not appropriate to sculpture; but he was told that there was just such a custom at Palermo in the carrying of the veil. Great care was bestowed on the training of the horses that took part in the procession in honour of the goddess, they being taught to rear and curve,—to show themselves off,—as was represented on the frieze. In regard to the gods who were represented on the frieze, there were many theories extant as to who they were. After a long research, he had come to the conclusion that they represented the twelve gods of Olympus, and not the gods who were worshipped on the Acropolis, as many archæologists maintained. The object of Phidias was not to make a realistic idea of this procession, but to produce a certain religious feeling in regard to the faith of the people. There was a combination of real and ideal in the general scheme of the frieze, and not only in the general scheme, but in treatment running through it. There was, besides, contrast, which gave so much additional colour and additional distinctness to Greek art. The frieze had never been equalled for elegance of composition and the variety and gracefulness of its figures. It was executed in low relief, in order to adapt it to the light; for, placed within the colonnade, it received its light between the columns, and by reflection from the pavement below. Probably the ground of this frieze was blue, and the figures were picked out with different colours, the flesh of the men being painted a sort of dun colour; but no trace of colour remained on the frieze. In conclusion, the lecturer recommended his hearers not only to study the frieze itself at the British Museum, but the whole scheme of the composition, and they would find that the more they looked at it the more they would be struck by the wonderful life and energy of the beautiful contrasts to be found. Everything in the frieze was so rhythmical; and the whole of it was a great lyrical poem, and, what was more, it was the only example of a continuous composition which they could study at any great length through antiquity. He would advise the study of the frieze of the Parthenon as they would study the poems of Homer, for it was the most precious thing that had come down to them from Greek sculpture.

Mr. Storr, at the close of the lecture, proposed a vote of thanks.

Mr. Mundella, M.P., in seconding the resolu-

tion, paid a high tribute to the ability of Mr. Newton as a lecturer, and warmly thanked him for the rich intellectual treat that he had given them. He regretted that there was not a larger attendance, which he attributed to the fact that the meeting had not been advertised. While speaking on the subject of art, he could not help referring to the remarks of Mr. Gladstone with respect to the position that England would occupy in the future, as compared with America. He was sorry that he could not agree with the right honourable gentleman. Apart from the great material resources this country possessed, as a nation they were thoroughly cultivated, and had a just appreciation of art, and there was a vast demand for its industrial productions. The conditions of industry must altogether be changed before they came to the end of their coal supply, and it must be at so distant a period that it was hardly worth considering. He instanced the French as an illustration of what could be done by an artistic nation without having these material resources; for France had, he believed, little coal or iron as compared to England, and yet there was a world-wide demand for her productions, because of the artistic feeling introduced. He believed that England was developing, though slowly, in the appreciation of art, which, to their interests, was gradually making itself felt. With respect to its value, it was felt at this moment at the Paris Exhibition. He thought that some day or other would make England a great workshop of art productions to supply other parts of the world.

THE CHELTENHAM CONGRESS OF THE SOCIAL SCIENCE ASSOCIATION.

The Right Hon. Lord Norton, as president of the Congress, delivered his inaugural address in the Assembly-rooms, High-street, Cheltenham, on Wednesday evening last. Taking the five heads under which the discussions are grouped, Law, Education, Health, Economy, and Art as applicable to social improvements, the President gave brief attention to each. We print what he said as to Health and Art:—

"*Health.*—I will now pass from the educational conflict with internal causes to the sanitary fight with external causes of social corruption and disease. 'Sanitation' is certainly a new term for a science of late promotion. Our commonest maxims about health are taking to scientific phraseology. We have long said that 'cleanliness is next to godliness'; but we must now say that 'purity of skin is a factor in sanitation.' I have no cause to depreciate the exalted study, for the report of the Royal Sanitary Commission, over which I presided during 1869 and 1870, has been the quarry from which all subsequent legislation on the subject has been taken. The amalgamated Department of Health and Poor Law, as of *ordinary* and *eleemosynary* administration, has assumed the attractive name of Local Government. The constitution of urban and rural sanitary authorities followed. The Act of 1871 consolidated offices before confused. Definite powers were given them to deal with the supply and pollution of water, overcrowding or unhealthiness of dwellings, offensive trades, and epidemic diseases, by the subsequent Acts of 1872, 1874, and 1875. In 1871 I brought in a Bill for consolidating all the twenty or thirty sanitary Acts then in the statute-book; and I had a digest made of them, which, with an elaborate index, has been almost as useful as consolidation. On the whole, in review of what has been done, I think a great step has been taken from former negligence, I hope not swerving towards too much officialism. No doubt there is that danger, and for an instance of its occurrence already I think the appointment of permanent medical officers over the whole kingdom has duplicated much of the work which might be sufficiently and even better done by good nuisance inspectors, and has thrown into a perfunctory routine the special assistance which on emergencies would be much better obtained from the best professional advice to be got as the occasion required. But much is still wanted to complete the sanitary reform begun. Areas have to be adjusted, county action provided for, and, above all, consolidation and arrangement of the law. The powers of local authorities on various subjects want clearer definition, and in some respects widening. In Birmingham, the want of clearness in the law has allowed too wide an exercise of powers given against overcrowded and unhealthy dwellings, so as to embrace grand schemes of town embellishment, involving great town taxation and debt, and town speculation in the property taken in hand for sanitary improvement only. In defence against nuisances, on the other hand, local powers want widening. I am specially interested in guarding from pollution the supply of water. My solitary defence of a whole valley from what Birmingham thought to be its natural use as a washpot for the town, has given the precedent for the rural *tuum* against the urban *meum* in this respect. The towns have learnt and taught a great lesson in the struggle,—that there is no such thing as refuse to be cast out upon a neighbour or anywhere; but that a real valuable use may be found for everything, if people will take the trouble, or can be forced, to find it out. No more important record could be published than that of things which have been treated as refuse and discovered to be capable of profitable application. Rivers have been poisoned with chemicals which the poisoners were at the same time buying at a large price in another shape, and citizens ruined in lawsuits trying to get rid of materials which, applied to adjoining land, have for the first time shown what a lavish return the earth will give for an enlightened application. The sole remaining problem in arriving at a lucrative application of sewage to land,—the only proper application,—in the difficult case of large towns, is how to separate storm-water from the sewers, admitting only enough of ordinary rainfall to flush them. This remaining problem solved, and even the sewage of London may fertilise the hungry neighbourhood without mischievously making sandbanks in the Thames, or adding the poisoned to the black list of the drowned in its polluted waters. Our chief business in the Department of Health is to enlighten a blind self-interest how its own advancement may take part in the common good, and certainly the first sanitary social duty is to keep the common property of air and water pure. . . . .

Art.—In conclusion, I will say one word only on the new department of our discussions, that of art. Its introduction has rightly asserted the essential association of beauty with convenience and utility, and the refining influence of its study on the commercial spirit. Surely it is the ignorance resulting from its long-neglected study that has allowed the notion to spring up that beauty is something separate from fitness, something to be added as ornament, and not consisting, as it does, in cultivated adaptation. Has not this error led our architects and manufacturers to borrow incongruous features from other conceptions, or, at best, to seek beauty for their own works abstractedly from their use and purpose? There is essential beauty, no doubt, in form, and essential ugliness, too. It is not for me to conjecture why swans contrast with geese. They certainly express each its own idea, whatever may be the purpose of forms expressing ugliness. But talking of art as to its application in social science, one is simply considering its usefulness in adding beauty to utility, and that addition must chiefly consist in the expression of fitness and truth. Too many even think for beauty's sake to make things look like something different from what they are; an engine-house like a church, a smoke-shaft like a campanile, a pair of tongs like a Gothic arch, and, in this idea, to conceal features which properly belong to the design, as instead of making chimneys honestly and gracefully to fulfil their part, twisting them into buttresses. It is thought a beauty to make china look like gold or bronze, and house decorations as various counterfeits and imitations, such as wall-paper as embossed leather. This is jugglery, not art,—or certainly not art giving beauty to utility. To make a building commend itself to the eye as admirably suited to its purpose, to depend for beauty on proportion, to dare to leave large breadth of space unornamented in reliance on its fitness speaking for itself, to eschew unmeaning features, sham windows, and superfluous detail, to imitate Nature in truth and in appropriate effect, to embellish forms without a masquerade of colours as a savage tattooing his skin, such are true aims for art, taking beauty as its ingredient, and not as an adjunct. We go beyond asserting that a general diffusion of a sound artistic spirit would be a social good, to consider in what that soundness must consist. We shall overhaul our street architects for making chimneys that will not draw, and so inartistically as to entail on all our streets the horror of sky-lines of zinc piping; or for the carelessness which gives us crumbling walls, or the cheat of windows looking colossal outside and cut in half for use within, or the inadaptation of reception-rooms that require temporary verandahs to be added whenever they receive,—all losing more and more of beauty as they sacrifice its essence to its false idolatry. Beauty will follow the designs of those who work in its full spirit, who seek neither beauty apart from utility, nor, on the other hand, utility apart from beauty. About this latter error, let me quote the noble words of Mr. Gladstone, the expression of one of the finest, and richest, if too impulsive, spirits in this country:—"Beauty is not an accident of things; it pertains to their essence. Reject the false philosophy which asks what does it matter, provided a thing be useful, whether it be beautiful or not? Nothing is more striking than the profuseness with which the Almighty has shed over His works an endless and boundless beauty. To this the mind of man still answers from within. Man's nature craves for some sign of what is beautiful. This makes the Spitalfields weaver, in the murky districts of London, train canaries and bullfinches to sing to him at his work. This fills the windows of the poorest with flowers. This, in a loftier region, taught the early masters of the fine arts to present the objects of our faith in the noblest forms of beauty their minds could conceive."

On Thursday morning the President of the Economy and Trade Department, Professor Bonamy Price, delivered his address. The Professor summed up thus:—

"To resume, in conclusion. The critical point with reference to the loss of authority caused by the method adopted by eminent economical writers is not so much whether political economy is in some sense a science, as whether the rigorous scientific treatment they pursue is necessary or desirable. Science is a vague word; and the limitation of its definition most difficult. There are reasonings carried on by every one on the commonest subjects, which, if minutely scrutinised, must be held to involve science. But economists proceed far beyond such modes of proving. Their aim is to build up a regular scientific structure, a systematic development of co-ordinated knowledge. They proclaim economical laws. In pursuing this method they ignore the nature of their subject, and the world which they are called to address. Their function is to explain industrial and trading processes practised by all. The discussions they conduct, and the conclusions they reach, are understood at once by natural sagacity. It immediately perceives that this is exactly what intelligent men do. The persons addressed are every class in the nation. They are incessantly speaking on economical topics in one way or another; much of what the economists write they have themselves said often. They will not listen to talk about laws on such matters. They are willing to be told of laws of chemistry and hydrostatics. They are conscious that, not having studied them, they know nothing of such subjects. They are willing to be informed that, in these regions, certain effects take place in a regular way, and the word 'law' only expresses this fact to their minds. But on the operations which occupy their lives they refuse to be silenced by the announcement of laws by persons who claim to be learned. They feel that they are often thinking, to a large extent, the very same things that the economists write,—that they argue as well, indeed with more familiar acquaintance with the subject. If they are to be convinced of error it can be done only by the teacher speaking their language; they will listen to nothing else. This is the true world in which political economy is called to spend its life; if it chooses to dwell in a temple of science, it will find few listeners. Its influence, when it is thus handled, inevitably decays, and to make it a part of sociology, so that its truths shall be studied and its teaching proclaimed only in sociological writing, will be to extinguish it for its one real audience,—the mass of mankind."

At the close of the address, the work was commenced in the various departments, and will be noticed by us hereafter.

We print elsewhere one of the papers read on Thursday morning in the Art Section.

Ludlow.—The Shropshire and West Midland Horse and Carriage Repository, just erected for Messrs. Millward & Urwick, is situated in Corve-street. The architect is Mr. Herbert Evans, and the builder is Mr. James Hine.

TESTIMONIAL TO MR. STANLEY G. BIRD.

The presentation of the testimonial given by the Central Association of Master Builders to Mr. Stanley G. Bird, took place on the 16th Inst., at the Freemasons' Tavern, Great Queen-street, when between thirty and forty gentlemen sat down to dinner, under the presidency of Mr. G. F. Trollope, who was supported by Messrs. T. H., G., M. G., & F. Adamson, Anderson, Burt, jun., F. J. & H. C. Dove, C. Fish, J. Freeman, Freeman, jun., J. Greenwood, B. Hannen, S. T. Holland, W. S. Horner, Horner, jun., H. & E. Kelley, H. Lea, A. Lown, A. Mansfield, T. Patrick, G. Plucknett, Prime, Rider, Robinson, Stirling, A. Thorne, G. H. Trollope Wall, Williams, &c. &c. Letters regretting non-attendance were received from Messrs. Colls, Conder, Lucas, Waller, &c.

The testimonial, which consisted of a silver salver, tea and coffee service, dessert-stand, and salt-cellars, accompanied by an illuminated album containing an address signed by the whole of the subscribers, was presented to the guest of the evening by the chairman, who, after thanking Mr. Bird for the energy and courtesy he had displayed as honorary secretary of the Association from its commencement, congratulated the members that, although losing that gentleman's services in an official capacity, they would still have the benefit of his counsel and advice on the committee, and asked them to drink to the "Long life and happiness of Mr. S. G. Bird and Family."

This was done with the greatest cordiality, and Mr. Bird, in responding, acknowledged his indebtedness to the assistance rendered him by Mr. S. T. Holland. Some few other toasts having been honoured, a very pleasant evening came to a close.

AFRICA AS A FIELD FOR BRITISH COMMERCE.

Mr. James Bradshaw, of Urmston, near Manchester, writes to direct attention to "Our Second India," as Africa has been called, as a market for British commerce. He refers to the great depreciation of property in Lancashire resulting from the rivalry of the cotton-mills of America, India, Brazil, and other countries,—remarking, *en passant*, that "new mills with the most modern appliances can now be bought in Oldham for half their prime cost,"—and then proceeds to discuss the means to be taken not only to avoid its further retrogression, but to restore to its former activity and progression the cotton-trade of Lancashire, the ramifications of which, as he says, are so widely-spread that every trade in the kingdom is directly or indirectly affected by them, and notably the coal and iron trades. Commercial treaties; abolition of Indian import duties; abandonment of Free Trade and return to Protection; short time; and lower wages, have been suggested as panaceas, but they appear to Mr. Bradshaw only to deal with the fringe of the difficulty, and to be, at best, only calculated to afford temporary relief. The only effective remedy, he thinks, is to be found in thoroughly opening up Africa to British commerce. Africa, he remarks, with its two hundred millions of inhabitants, is a land of mighty lakes and rivers, forming natural highways for commerce, and it overflows with animal, vegetable, and mineral resources hitherto unutilised by man. As a collateral result of intimate and widely-diffused commercial relations with Africa, the traffic in slaves, with all its horrors, would be, in Mr. Bradshaw's opinion, driven out of the country in a few years. As to the application of the remedy, Mr. Bradshaw says:—

"The work can only be done speedily and effectually by a sort of modified East India Corporation, possessing the power to protect its persons and property in every part of Africa, and with the financial strength to remove difficulties which are beyond the power of individual enterprise to cope with. From whatever point of view this subject be regarded, religiously, philanthropically, or commercially, no Englishman can say,—'It does not concern me'; for Lancashire in particular, from the Earl of Derby, whose great land revenue has been created chiefly by the local industry, to the humblest scavenger in the cotton-mill, this question of Africa as our future field of commercial enterprise is paramount."

The Pathway through St. Alban's Abbey.—At the Herts Quarter Sessions, last week, Mr. J. Lydekker applied to the Court for a certificate to stop up the old footway through the Abbey. It being stated that the new way had been properly made, the Court granted the order.

THE CAPITAL OF CYPRUS.

The place now generally described as the capital of Cyprus, and where the Turkish governor used to dream away his life, Lefkosia (called also, some say incorrectly, Nikosia), lies in the interior of the island, in the centre of a large plain on the Pidias (Pedicus). It is a mystery why this town was selected as the capital, both Famagosta and Larnaka, on the east and south coasts respectively, being of far more importance commercially. The town offers a fine view, enhanced by small palm forests surrounding it, from outside. The fortifications are the old Venetian. The guns still standing in them are adorned by the lion of St. Mark, and the coat of arms of the Adriatic republic may yet be seen on the walls of the Pasha's konak. The interior of the town is—filthy. We see miserable, tumble-down houses, and walk in narrow, reeking streets; as in most Cyprian towns, wherever we tread there are dirt and vermin. Lefkosia, in short, is another Augean stable more for us to clean out. This much as a general estimate of the town.

The stranger now visiting Lefkosia, if he will take the trouble of turning round as he is entering the town by one of its three gates, will be at once struck by a reform following in the train of the English occupation. Should he come from Famagosta, riding through the gate of that name, he will read in large letters, "The Channel Squadron Gate." In a similar manner, the Baffo Kapu has been patriotically altered to "The Minotaur Gate," the Kerinyé Gate being reformed into "The Invincible Gate." This change has a deep signification. It means that England owes this increase of her empire to her ironclad fleet, which for the last eight months has been carrying on determinate, if silent, war in the Sea of Marmora against the Russians. Well, the three gates, according to their former names, lead to Famagosta, Baffo, and Kerinyé respectively, consequently towards east, south-west, and north. Under Turkish rule, they were closed at sunset, in order not to disturb the sentinels in their sleep; and the hapless traveller who had the misfortune of arriving before the walls of Lefkosia after sunset had to chew the cud of patience until sunrise, unless a special order of the pasha released him. All this has also been reformed off the face of Cyprus. Anybody is at liberty now to enter the town at any hour. He may also walk to his heart's content on the ramparts, may look at the Venetian guns without apprehension of being driven away by Turkish soldiers with such expletives as "Giaour!" "Kyafir!" or "Köpek!" (dog). The walk on the ramparts is one of the most delightful strolls in the world; and if once an avenue of trees has been planted there, there is no further need for Lefkosia to lay out other grounds.

The circumference of Lefkosia is about three miles. The eleven bastions, all heart-shaped with blunt points, jut out of the circle at equal distances, and impart to the works the character of a star fortress. The two excellent water-conduits of Lefkosia run part of their course along the town walls. The best of the two has its origin at Istrovilo, not far from the town, and is called Arale Ahmed Pasha. The second water-conduit comes from Siliftar, half an hour distant, runs underneath the town-wall as far as the Mausa Kapu, whence the Archbishop has conducted it in iron pipes into his *malhallé* (quarter of the town). The remaining pipes (*künks*) are all of clay, made in Lefkosia itself at about 3d. a foot. Lefkosia is thus clasped by a fine belt of water, which now feeds a fountain, now supplies a drinking-place, and finally disperses itself in a thousand threads throughout the town, distributing health and coolness. Considering the great drought throughout the year here, this is a real blessing, for not a drop of water is to be found in the bed of the Pidias, which runs past the town, except during the rainy season. Then that river rises to a tremendous height; and should the Baffo-gate not be closed early enough, it pours its waters into the town, carrying destruction in its path. At the present day there is still to be seen the bed which the torrent burrowed for itself at a former inundation.

It is difficult to find one's way in the labyrinth formed by the streets of Lefkosia, for names of streets are scarce. There is as yet no Metropolitan Board of Works to look after such little matters. The Christians divide the town into "enorias," the Turks into "mahallés," and people find their way by them. There are about 3,000 houses; the number of inhabitants is fixed by everybody as he pleases, a census being here, as everywhere else in Turkey, considered an article of luxury.

Lefkosia possessed formerly hundreds of churches and chapels. Chroniclers mention no less than 250. A great number of them are still preserved; they serve, with the exception of a Maronite church and an Armenian one, all for orthodox worship. There are not many features of beauty about any of them; they are mostly awkward buildings, to which since about twenty years belfries have been added (formerly the ringing of bells was not permitted), the slender elegance of which is little suited to the heavy nave. The interior generally is overloaded with very ugly pictures of saints, in the well-known orthodox style, on a gold ground. They are exhibited especially on holidays and saints' days; and as the Cypriote Greeks are great fanatics in religious matters, the papas make a good thing of it.

In Cyprus every saint's picture, every Madonna, has a particular power and special merits, known to every believer. The first rank is occupied by the Panhagia of Chiko, a monastery north-west of Olympus. The monastery being too far distant from the various towns, the Madonna is sometimes taken the round of the country; it is alleged that she is enclosed in a shrine; the orthodox must not see her, because instant death would follow were they to get a glimpse of her. It is therefore only permitted to kiss reverently a small opening of glass, from which it has been inferred by liberal-minded monastics that the shrine is empty.

The oldest church in Lefkosia is the Tripiotis, after a new building has taken the place of the Phaneromeni. The Catholic monastery of St. Croce is occupied by Italian and Spanish monks. All those churches, without exception, possess rooms for strangers, which travellers may have for the asking, though they are expected to leave a trifle when departing.

The pearl among the churches of Lefkosia has been appropriated by the Turks, the Aga Sofia. It lies in the centre of the town, not far from the Bazaar, seen far and wide, the landmark of Lefkosia. Its history leads us back to the times of the chivalrous Lusignans, whose figures in armour may still be seen on the floor of the church. Now Aga Sofia is old and dilapidated, a handsome widow in the mourning of four centuries. Its towers have been thrown down; its finials have been lopped off; its columns have been coated with execrable colours; its floor has been scraped everywhere, so that no trace of the Christian inscriptions remain; in its side chapels weeds grow, filth is accumulating. Everything points to poverty and neglect. The mats on the floor are in rags, and mouldy; it is hardly worth while to raise them, that the foot of the Giaour should not defile them. It is reported that the church contains several chapels still perfectly preserved. Thus a few years ago Mehmed Ali Effendi, the chief engineer of Cyprus, who was ordered to repair the church, discovered a Gothic arch under the light coating of colour of the nave, which probably had been walled up before the capture by the Turks. The nave is lighted by five large lancet windows. The church not lying in the prescribed direction towards Mecca, the Moslem arrangements of a mosque, desks, &c., had to be fixed from right to left, which causes a most comical impression.

The bazaars of Lefkosia deserve some mention, because they are the largest in the island; they extend from the Aga Sofia in all directions for some distance. Of course, they cannot be compared with those of Constantinople. But one asks, on wandering about them taking notes, what might have become of this industrious and clever Greek race if its development had not been so violently interrupted? One need only look at the silk stuffs which are made of native yarn; so simple, so pretty, so full of colour, so soft, and—so cheap! A beautiful silk pocket-handkerchief may be bought for a shilling. The whole female portion of the Greek population understands this industry; it is its own entirely. Though the Greek women of Lefkosia are not pretty, they are clever. The Turkish women are far behind them in this respect. There is a bazaar here expressly for women's work, where they (the women) offer embroideries and kerchiefs, purses, tobacco-pouches, takkis (crocheted linings for the fez), &c., which they make themselves. Though the Koran and its interpretation expressly forbids women to trade, in Lefkosia

this seems to have been forgotten long ago. The male Turks are said to understand, besides drinking coffee and smoking the nargileh, the trade of dyeing. The method pursued is very primitive, but the colours are said to be lasting.

The principal day for all bazaars is Friday. The peasantry round the town come from all directions, bringing for sale everything the island produces. There is, in the first place, the cattle-market (Haivan Bazaar), on the Seraglio Place. Turks and Christians come riding into the town, crying out, one louder than the other, "Kanmassin!" ("Take care!"), which is a curious expression, being corrupted from *tokanmassin*, "do not touch." The corn-market, held in front of the Buyuk Han, built by Mustapha, is still more crowded. There the peasants stand in a row, closely wedged together, trying to get hold of the "Mültezim." This person is the farmer of the scales, for which he pays a rent three times a year to the Government. He has altogether four or five of them, and all the corn brought into Lefkosia must be weighed on them, 10 para being charged for 100 okka, not quite a farthing per cwt. Unfortunately that number does not at all suffice for Friday's market; and thus there is a constant chorus of "Ben evel geldim!" ("I was here earlier"), "Nebet benim dir!" ("It is my turn"). The uproar is beyond description, ending very often in free fights. Between the cattle and corn markets is the Iplik Bazaar (cotton-market). The cotton is weighed at haphazard, on a beam without tongue, used for weighing straw; stones of different sizes, the burthen of which is only known to the seller, forming the weights. There is also a Balyk Bazaar (fish-market), but unfortunately fish is scarce. Timber is sold outside the town, at the Baffo Gate, and is derived from the Solia Forest, near Lefka, in the west. It is dragged down the mountains by oxen, and then laden on two-wheeled carts. Charcoal, straw, and potatoes are generally brought into the town on camels. There is no coal. A seam of this valuable material was discovered a few years ago in the sloping bank of a river near Piskopi, but there the matter rested.

Besides the above bazaars, there are a number of others, where the various trades have their booths, such as shoemakers', tailors', and coppersmiths' bazaars. An article much sold is the changar, a large boot, which is made there. One of them weighs up to 3 lb.; the soles are from 5 in. to 6 in. thick; the heels have tips; the price being up to 70 piastres (about 10s.) per pair. They are an efficient protection in mountainous districts against serpents.*

THE LARGEST COVERED RESERVOIR IN THE KINGDOM.

There has just been completed at Widnes, in Lancashire, what is believed to be the largest covered reservoir in the kingdom. It has occupied two years and a half in construction, having been begun on the 16th of April, 1876. The total cost, including the mains attached to it, amounts to over 30,000*l.*

Widnes is a manufacturing town of about 22,000 inhabitants, and the water supply is under the control of the Local Board of Health. A very large quantity of water is required for manufacturing purposes. The supply is exclusively from wells, known as Stock's Well, Netherley, and Belle Vale,—the latter having only recently been purchased by the Local Board. These are calculated to meet the domestic and manufacturing requirements, not only of the neighbourhood itself, but of a district contiguous of considerable extent.

The object of the new reservoir, which is situated at Pex Hill, is the storage of the water pumped at Netherley and Stock's Well. It is upon a lower level than the old reservoir adjoining it, the new one being intended to supply the town and the lower parts of the district, while the old one will be reserved for the higher portions. Separate leading mains have been laid with this object in view. The water can be delivered into the new reservoir direct from the engine pumps, or through the overflow from the old one, as may be necessary.

The following are the particulars of the new construction. To support the covering arches there are 352 piers or columns. The arches are 9 in. thick, and are covered with ballast and earth. Under the brick flooring there is a layer of asphalte over the whole area, $\frac{3}{4}$ in. thick. This is jointed to a lining of asphalte, $1\frac{1}{4}$ in. thick, in the side walls. The asphalte is to prevent the water leaking or filtering through the walls, or through the red rock underneath the floor. The channels formed in the floor are to admit of its being thoroughly emptied and washed out, the cleansing pipe being taken from the bottom of the visible well, and then carried under the reservoir floor, the side wall, and clear of the embankment upon the old reservoir side. The outlet to the town is 24 in. in diameter; the inlet (which falls into the large basin) is 18 in. in diameter. The overflow-pipe is in the same line of arch or bay as the cleansing wall, and goes into the same line of pipe under the floor, any overflow falling into the quarry upon the hill.

The length of the reservoir is 330 ft.; the width, 240 ft.; the depth at time of overflow, 22 ft. 3 in. It will contain 10,000,000 gallons of water when full; the old one held only 1,250,000 gallons. The lower terrace and banks at the west end have been formed with the waste material from the excavation. The masonry of the piers and walls has been obtained from the site of the reservoir. It is said that while this work has cost 3*l.* for every million gallons it will contain, the average cost throughout the country is 5*l.* per million gallons.

Mr. John Taylor, of Widnes, was the contractor; Mr. Henry Roberts having drawn the plans.

We are indebted for some of the materials of this sketch to the letters of the special correspondent of the *Kölnische Zeitung* in Cyprus. Information respecting our latest acquisition, from an impartial pen, will doubtless be welcome to many of our readers.

A COMPREHENSIVE DRAINAGE SCHEME.

The Corporation of the City of Exeter have at present under their consideration a very comprehensive scheme for the main drainage of Exeter and the district for several miles around. The project contemplates drainage works extending from Tiverton to Exmouth, a distance of twenty-five miles. The proposal is to form one large drainage area down the whole valley of the Exe, and to construct a sewer which shall receive the drainage of Tiverton, Collumpton, and Crediton, and after taking up the sewage of Exeter it shall receive that of Topsham, Lympstone, and Exmouth, and finally discharge the whole into the sea at Straight Point, Exmouth. The estimated cost is formidable, being no less than 200,000*l.*, but it appears to be generally thought by the Exeter municipal authorities that this large outlay would be well spent, as it is believed that it would finally settle the sewage difficulty of the district. The Town Council are about to hold a special meeting in order to discuss the whole question.

ST. MARTIN'S IN THE FIELDS.

Improvements have, for some time past, been in progress at the Church of St. Martin-in-the-Fields, Trafalgar-square. The several flights of steps at the west and north and south sides, leading to the portico, have been taken up and redressed, and in several instances entirely new steps have replaced those worn out. The columns supporting the portico have likewise been cleaned, whilst the whole of the floor of the portico has been relaid in Purbeck stone, of the uniform dimensions of 2 ft. square. The floors of the five porches leading into the body of the edifice have likewise been relaid in Purbeck, in a similar manner to that of the portico floor. The panels forming the ceiling of the portico have also been cleaned and decorated. All the doors of the five entrances to the church are of English oak; but for many years past this material has been obscured by successive coats of paint. The paint has just been removed (which involved a considerable amount of labour), and the finely-grained oak restored to view; and where the faces of the doors have been polished, which is intended, they will present a greatly improved appearance. It is a noteworthy fact that, when the paint was removed from the doors at the west end of the church, it was discovered that they were largely dotted with shot pellets, indicating their having received the contents of firearms during some riots or other disturbances in former days. The organ has been entirely taken to pieces, and cleaned and rebuilt, by Messrs. Hill & Co.

The works have been carried out under the direction of Mr. Penrose, architect at St. Paul's Cathedral, Mr. Shaw, of King Edward-street, City, being the contractor.

ART-WORKMEN AS JUDGES OF THEIR OWN ART-WORK.

In contemplating the plan now in course of working out, by the Society of Arts, for more thoroughly utilising and comprehending the scope and meaning of the great art display at Paris, and in finding out the part which the workman has played in it, and the results of that work, several considerations suggest themselves. The idea is, as is known, to elicit from the workmen themselves their own estimate of the specimens of their own sort of work. All must need wish success to the plan, as we do.

It would be equally difficult to overrate the import of such a mode of inquiry as this, for who, it may well be asked, can judge so well of the special character, and goodness or badness, of any work, as it comes from the hands of the workmen, as those who belong to, and have themselves practised, the very same craft and produced the like work? It would seem, at first sight, to be all but the same thing as though the Royal Academy had sent a deputation of their ablest to the French Show, to report on the character and value of the paintings exhibited, and to pronounce judgment on "methods of work," and on the goodness or badness of the materials employed. We think it must have struck all in this fair light, and we can but hope that the final result of this bold experiment will justify such very reasonable expectations. It seems at first sight all of it so easy and simple a task, and all but obvious, but it is in reality not so. On the contrary, it is of the last order of difficulty, and perplexity, indeed, consequent on the difference in the mode of work in the past and the present. In the past the matter was simple enough; its elements were individual, and in each case single, but now all this simplicity is changed, and has gradually, if truth must be told, disappeared all but totally.

To make the matter as simple as may be, let us take a single example. There can be no sort of doubt that before the modern improvement of the division of labour, as it is termed, came into active operation, whereby any special work is the result of a passing successively through the hands of a succession of workmen, all as able as you will, the simple plan was to put any certain work into the hands of a single artisan, and he then, whether well or ill, executed, quickly or slowly, the whole of it, from first to last; indeed, just as at the present hour most Eastern work and art are done. We have now before us a small common earthenware jar from Morocco, and it is as evidently in idea, form, manipulation, and "ornament,"—what there is of it,—the production of one man, the finger-and-thumb work and soul work of one workman, as any one thing can possibly be. And here it is that we may ask, and ask fairly, what sort of workman is the author of such a vase or cup as this, and what his art-power and status, and what may we expect of him in the future; and what is he as compared with those artist-workmen of old who produced the vases and cups and amphoræ in the Museum from ancient Etruria? There, and then, at least, they understood the art and mystery of the potter's trade and vocation. It is this individualised work that we presume the Society is in search of.

Now, the question, therefore, to be put in the Paris show, as far as the *art*-workman is concerned, is this,—Can any and what single work or works be thus referred to a single author, each one of them not only as an example of workmanship, and manipulative power of action, but in thought and idea? Has the workman here, as evidenced in his work, a "head" as well as hands and skilful and ever-ready fingers,—we are confining ourselves to art-work, be it recollected,—or is each individual workman merely one item of many, all working together, and one after another, or interchangeably? And more than all, perhaps, is he with others working out an idea or artistic thought drawn out for him by another artist, he being merely one of the tools used in its production, and the final result a good one? It is this which is the real question at the Paris Show, and it is this that, as we take it, the Society of Arts meant when they sent this workmen's deputation to Paris to report. But we cannot help asking, with some curiosity, and perhaps a little doubt, are those who have gone to Paris to find all this out, and to minutely examine the art display and its infinite variety of details, fully qualified to do this, knowing so little of any other mode of work?

We can hardly think this. Looking to what our workmen are, and at what they are expected to do, *i.e.*, to be always ready at a moment's notice, and to be able, as the phrase is, to put each man his hands to anything—as, for example, the stone-carvers are expected to do,—we can hardly expect them to go into the character of art-work in this special way, or with an eye to the individualities of the art-power at work, as evidenced in any particular art-work. They must need look upon the whole as a final result, and as more or less the result of a tradesman-like way of producing it, as smart and finished work simply, and as thoroughly and obviously produced intelligible work. We are not complaining of this, as far as it goes, but is there not a something more than this, and a something infinitely higher and more to be sought after? There must be, or the older art of the past, and the antique art from the great Classic times, come to nothing. If mere mechanism, or the mere working, as machines, can accomplish all that is needed, then does the individual man and artist disappear, and he is at once lost in the mere fact of this mechanical action, and in the very combination and division of labour now everywhere prevailing, and which has, indeed, it must be confessed, made the modern world, as far as art is concerned, what it is. That there are advantages in it but few will deny, but at what a sacrifice!

We could here, by going into details, afford not a few instances of this, and quite sure we are that such would convince the most sceptical, and would prove of interest to all who care for such matters. Let us, by way of illustration, cite but a single instance. It is close at hand, and may be seen by all; and he who runs may read. We refer to the carving, or sculptured forms, on the four angles of the base of the Monument, Fish-street-hill. These capital stone carvings have not had the notice they so well merit. Perhaps they are too familiar. They were the work of one Edward Pierce, jun., and they cost, it is of interest to add, 50*l.* each. These dragons are really admirably wrought and conceived, and are evidently the invention of, and thinking out, as well as the work of the young sculptor who executed them, from first to last. They were not done, as such work would be nowadays, by two or three workmen, each man doing the very best, but none of them being able to claim the work as his. If those who are interested would see what is meant by artist work, why, here they may see it. Happily, they have been left alone. They are a good deal broken in divers places, but are not a wit the worse for all that. How different this from the new mode of work, say at the Law Courts, where, carefully as the work is executed, and this is really noteworthy, it seems to matter but little who does the work, or how many take it up by turns.

We have named but one single instance of this individualised art work, but could go on to almost any length citing example after example, each of them to the full as much to the purpose. But it may suffice to call the attention of the Society of Arts to what is really needed while there is yet time, before the close of the Exhibition. What is needed is a new system of work, and a closer look at things. No one doubts the zeal and capacity of those who have contributed to, and done the work of, the Paris display of art-work; but to know all about it, to judge of its precise value, and to give praise where it is really and truly due, we must need see who individually does the work, and who has thought it out, just as in a picture. We must know the painter, and see into his thoughts, and look at his *bonâ-fide* handwork,—at the individual impression he makes on the dead materials, both mentally and manually; for it is this which, indeed, constitutes artist's work, as distinguished from mere machine-made work. And it is here, too, that the work of the past,—of the antique,—is still *per se*.

The Woods and Forests.—The Fifty-sixth Report of the Commissioners of Her Majesty's Woods, Forests, and Land Revenues has been issued. Mr. Gore, the Commissioner in charge of the land revenues, reports that the total receipts on the property in his charge during the year ended March 31st last amounted to 348,711*l.* The outlay incurred during the past year upon the property in question in the drainage and reclamation of land, in building and repairing farmhouses and homesteads and cottages for labourers, &c., amounted to 24,670*l.*

ON THE FUTURE OF ENGLISH ART.

Sir,—*Le Roi est mort. Vive le Roi!* A reign has just ended, and now the realm of the Fine Arts looks forward with expectancy and hopefulness to another. There is happily no difference of opinion as to the rightful heir to the throne. And that he of all our art kings since Reynolds will not only be capable of wearing the ermine, but also of ruling. In the interregnum one breathes more freely, and is tempted to give utterance to opinions which hitherto would have been useless to express.

What reams upon reams of paper have been blotted, and what breath has been wasted upon the duty of inculcating taste, and the necessity of establishing galleries, museums, &c., for this purpose. In no country has so much been written upon and talked about art, and in none has so little been theoretically and practically accomplished in its true interests. Art criticism is for the most part but the expression of "whims," which will be standing records of the defective mental grip of the age, and art performance itself is in the main without any national aim, incomplete and fragmentary. Pictures, it is true, have been painted by the thousand. We have a museum containing the magnificent remains of the works of Phidias, and there is a National Gallery containing fine works of the old masters. And yet what evidences do our painting and sculpture show of our vast art educational appliances, as these are generally supposed to be? Do we see any tendency in our art towards high thought, towards a national art of an epic and monumental character? Can we place the great majority of our painters and sculptors, either in genius or in technical skill, on a level with the third-rate men of the great art epochs? Nay, can we in the main place the art of the day upon a level with that of Hogarth, Reynolds, Gainsborough, Copley, Stothard, Flaxman, Banks, and Bacon? Of what value, then, have all our recent acquisitions of ancient art-treasures, and the institution of all our art-schools, been? Have the results been anything like an equivalent for the vast expenditure of public money? Instead of spending our money as common-sense nations did in employing artists, we go on spending money in increasing our collection of examples. In fact, we persist in taking every means but the right for encouraging art. We go to Paris and see the French painters, sculptors, and designers excelling in every department of the fine arts; and yet we persist in lauding our own art eccentricities and in hugging ourselves in the belief that the whole world is envious, and is endeavouring to follow our example. But when some useless scheme of art-education is to be promoted, different tactics are used. We are then told that we are behind other nations in all æsthetic and technical matters. Is life worth living? is a question which has been recently discussed. We will vary the question and ask if art-life is worth living, if we are for ever to be behind the past? Is it any equivalent for our vast amount of talking, writing, and expenditure that the art-schools are filled with male and female students whose aim will never be beyond that of smart sketching, and "clever bits"; and who, for the most part, will find out, after a little while, that they have been seduced to join a crowd of students which is out of all proportion to the demand, and who will have to join in that miserable chorus of "We've got no work to do"? All our splendid art-collections, both public and private, and all the lecturing upon the history of art, have as yet failed to teach us the one great common-sense principle that the progressive development of art is certain to attend on a continuous public demand for high effort. We try to breed Raffaelles and Michelangelos who will die without ever finding historic chapels or Vaticans to embellish.

"Upon what does good taste depend? It depends upon perfectly-constructed senses and a correct judgment,—upon a nature so attuned that it is in unison with everything that is beautiful and right. And this can only be brought about by correcting the entire substratum of mal-organisation, intellectual and physical." Do you expect to gather art from thorns, or taste from thistles? Go to! You are very absurdities yourselves, who need to go to school. The only direct road to good taste is, as an able correspondent of yours has forcibly pointed out, through general education. Every step higher in this direction will bring the nation nearer to good taste, and to the appreciation of excellence in art. The same writer has also pointed out that it would be as vain to expect a flower to bloom in space without root and stem as to expect fine art and good taste to come of ignorance, or to flourish grafted upon ignorance, and yet this is precisely the fallacy to which our wrong-headed art-reformers persist in clinging. It was with the growth of the leading intellects that art was developed both in Greece and in Italy. "Art is the flower, not the root of civilisation." Our art-reformers expect to succeed by an inverse process,—by planting upside down.

We have to shake ourselves free from the "craze" that art can be "crammed" into the soul. Art is the evidence either of the intellect's distance from or approximation to maturity. If the study of art example could create taste, to quote our previous authority, Europe had that example for centuries, for a period longer than it took Greece and Italy to create all that we profess so much to admire, and yet these art-treasures are still unrivalled." In short, I myself firmly believe that the constant presence and citation of these examples is rather prejudicial than instructive. It interferes with a natural and progressive development, for the art of music, which was not over-shadowed by ancient precedent, has during the same period taken root and developed into Classic excellence.

One of the first manifestations of a sound education is the love of simplicity, order, and proportion. These are qualities upon which we can reasonably descant; for it is in the power of the poorest to, in some measure, conform his surroundings to these primal elements of good taste; and even when works of art, in their very cheapest form, would be unattainable. Moreover, the tendency to crowd walls with prints and pictures should be discouraged, for it is anything but a sign of good taste. A wall swarmed with pictures and picture-frames is a dustbin, and oppresses one with the overcrowding, and the hustling together without any fitness of juxtaposition. Art should not be the workaday, but the holiday, entertainment of the eye. A thing of beauty placed here and there with judgment is a much greater evidence of good taste than any ostentatious display of a crowd of art-treasures. This is what we English have yet to learn. We have no sense of repose. That there should be blank spaces in decoration as well as jewelled spaces. Art, according to the art-maniacs, should be everywhere,—in every cottage, workhouse, and hospital, and all over them. They will have art! art! art! and nothing but art.

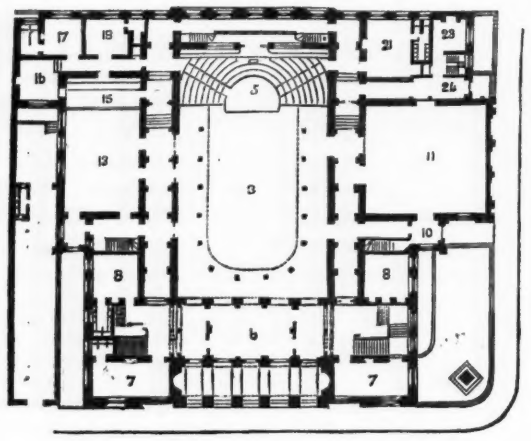
Then our self-constituted guides, who often, I fancy, must have some misgivings, some compunctions of ignorance, fancy they may, at least, safely exhort the student to study "Nature," as if there were anything else to study, as if Nature were not responsible for ugliness as well as beauty,—for the porcupine, the hippopotamus, the baboon, &c., as well as the human form. There must be contrariety, or even beauty would pall upon the sense. There must be plain spaces as well as ornament; moments when art should be present to us, and moments when it should be absent. But to all these important truths your would-be taste-reformer is totally oblivious, and in being oblivious shows that he himself is wanting in taste.

All our art projects are at present wheels and pinions without a mainspring,—a prime motor. The people in general know quite as much about art as your average art-reformer, and it would be much better to leave them alone in these matters, and to the growth of common sense. Good taste with good education would come in time as a matter of course. The better would it be if those who aspire to direct the public would show in their surroundings that they themselves possess good taste.

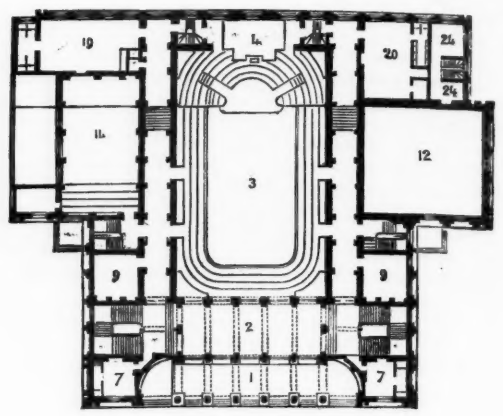
Meter.

THE GILBERT SCOTT MEMORIAL.

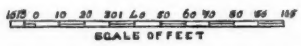
The committee appointed at the public meeting held in the Westminster Chapter-house in June last to erect a memorial and found an Art Workmen's Teachership in honour of Sir Gilbert Scott, have published a fourth list of donations, and earnestly invite further help. A sum of nearly 900*l.* has been raised. The personal memorial, as we have said, will take the form of a brass over the grave in Westminster Abbey. It is to be hoped that those who feel inclined to aid will come forward at once, for the committee are evidently spending money in advertisements which should not now be necessary.



GROUND PLAN



FIRST FLOOR PLAN



1. Loggia.
2. Promenade.
3. Central hall.
4. Organ.
5. Orchestra platform.
6. Entrance-hall.
7. Ladies' cloak-room.
8. Gentlemen's cloak-room.
9. Committee-room.
10. Porch.
11. Reading-room.
12. Upper part of reading-room.
13. Minor hall.
14. Upper part, minor hall.
15. Platform.
16. Green-room.
17. Solo ladies' retiring-room.
18. Solo gentlemen's retiring-room.
19 and 20. Chorus retiring-rooms.
21. Band retiring-room.
22. Entrance for performers.
23 and 24. Caretaker's house.

THE CLARK HALL, PAISLEY.

THE NEW CLARK HALL, PAISLEY.

These buildings are estimated to cost 40,000*l*., and the site 10,000*l*. The large hall occupies the centre of the block, and is 130 ft. long. The ground-floor space, exclusive of orchestra, is about 80 ft. by 60 ft., and may be approached not only from a front portico, but from north and south porches. The front or principal entrance doors, three in number, open into a spacious entrance-hall, which may be divided by doors or screens, so as to separate different classes of ticket-holders when necessary. The cloak-rooms are on each side of the entrance-hall, from which access is obtained to the corridors and staircases on either side of the large hall. A balcony will run round three sides of the hall, which will be about 11 ft. in width, and will be raised about 11 ft. from the floor level. It will be entered at different points from the upper corridors, which are approached by separate staircases leading from the several entrances. In addition to the balcony a space on the same level, 60 ft. by 20 ft., over the entrance-hall may be used as a promenade, and in fine weather could be thrown open to the loggia or front portico. Accommodation is provided for 2,000 persons in the large hall,—1,200 being seated on the ground-floor, 400 in the balcony or lower gallery, and 400 in an upper gallery, with orchestra and promenade in addition. The orchestra is placed at the west end of the hall, and underneath is a space which may be used as a serving-room in connexion with public dinners, or for storage of seats, &c. Two dinner-lifts from the kitchen department in the basement flat are here arranged. Proper retiring-rooms are provided in connexion with the orchestra, each having every comfort and convenience. The minor hall will be on the north side of the large hall, and will be entered from Smithhills-street. In size it will be 53 ft. by 30 ft., including a platform 12 ft. wide, and will accommodate an auditory of about 300 persons. It is divided from the large hall by a corridor, but will have doors of communication opposite to each other between the corridor and the two halls. The reading-room and smoking-room, 49 ft. by 42 ft., is placed on the south side, next the U. P. Church, and will be entered from the south portico, and in connexion with it are lavatories, &c. The officer's residence, which consists of seven rooms, is placed at the north-west angle adjoining the bridge over the river, and is conveniently placed for communicating with all parts of the building.

It is the intention of Mrs. Clark, of Gateside, the respected mother of the deceased donor of the hall, to place a large organ in the hall; and it is also proposed that in an unoccupied space at the north-east angle of the site there shall be erected a statue of the late Mr. George A. Clark.

Mr. Lynn is the architect.

NEW SYNAGOGUE, STOCKHOLM.

This synagogue, of which we present an exterior view, is one of the most noticeable edifices of the Swedish capital. It is the work of the architect, F. W. Scholander, who may well be satisfied with his creation.

The exterior view speaks for itself, but we may add a few particulars respecting the details of the interior. Entering the vestibule through the principal entrance at the western end of the synagogue, and ascending the broad staircase, the eye is attracted by the tabernacle, the holy of holies, and the niche where the Pentateuch is kept, and above them a large rose window.

The synagogue is constructed internally of wood, and divided by pillars into a nave and two aisles. It has at the western end two tiers of galleries, of which the upper one contains the organ; the lower one, as well as the side galleries, being reserved for the women, while the men worship in the body of the church. The seats nearest the choir are for the chiefs and elders, and from the open space, "El Mimmar," between those rows of seats, the Commandments are read.

The choir is raised five steps above the floor of the church. The pulpit and the stairs leading to the niche where the parchment rolls containing the five books of Moses are kept are raised another five steps, and are hidden by a gold embroidered velvet curtain, in the centre of which is the inscription, "Thoraskrona" (the Crown of the Law). Above run several extracts from Deuteronomy and the Proverbs, inscribed in gold letters on a blue ground. On both sides of the niche containing the Pentateuch are the Tables of the Law, the holy candlestick being on one side, while above hangs the ever-burning lamp, presented by King Gustavus III., and first lighted on the day of consecration.

The interior of the synagogue is richly adorned, cedar wood, ebony, and ivory alternating with bronze, gilding, colour, &c., in the style of the ancient examples. We know from the Biblical description of the Temple of Jerusalem that slabs of gold, silver, and gilt bronze used to play a great part in the decoration of palaces and places of worship, the cedar panelling of the walls of the Jerusalem Temple being covered by plates of gold. These not being obtainable here, the walls have been tinted a greyish green, with borders of many colours, and in patterns consistent with the ornamentation of the interior in general.

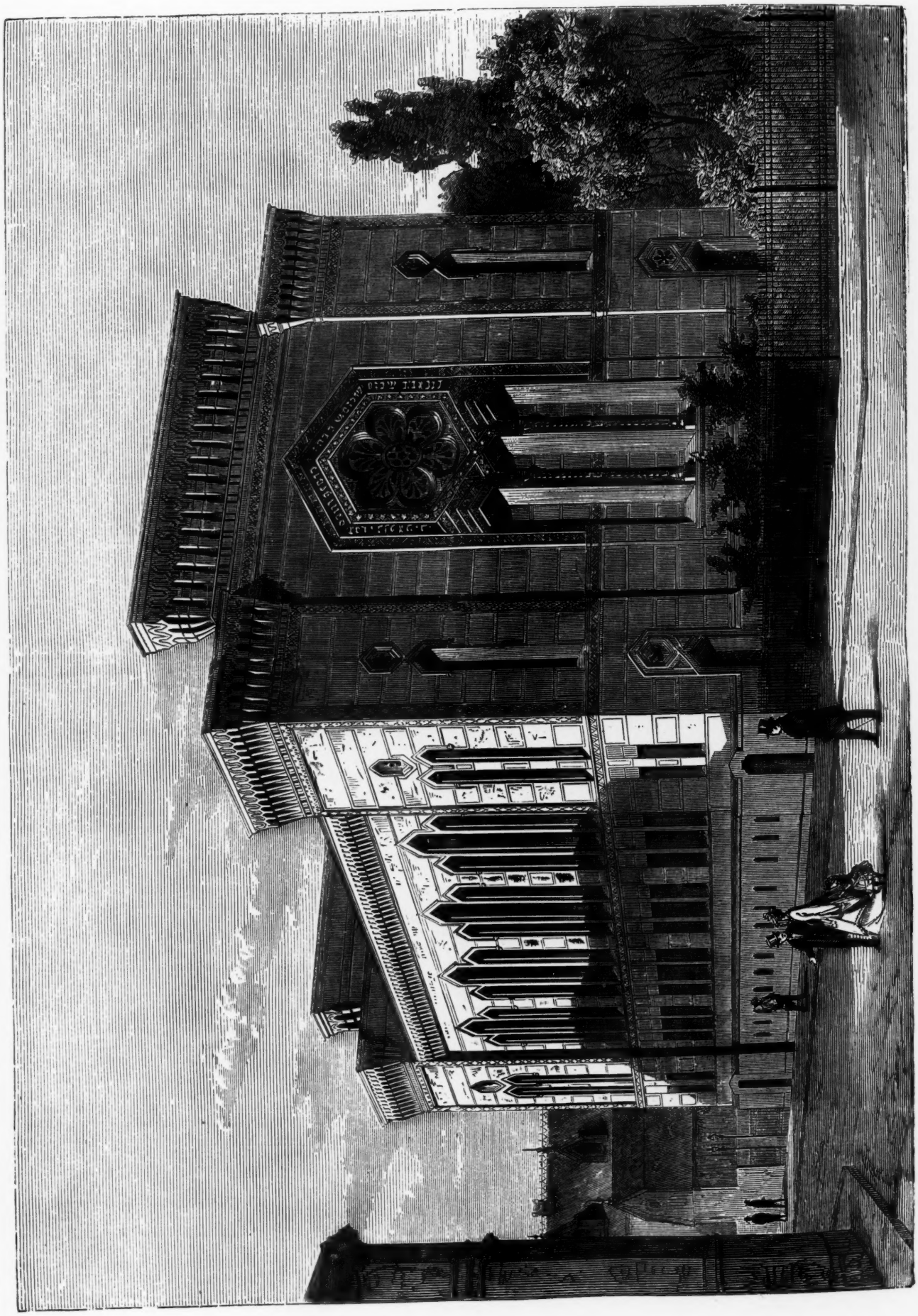
The ceiling has received a light colouring, reminding one of woollen counterpanes stretched across rafters. In the nave, the surface of the ceiling rises into tent-shaped cupolas, which serve three purposes. They remind of the Tabernacle during the wanderings in the Wilderness; they improve the acoustic properties of the building; and, finally, should the synagogue ever be surrounded by buildings higher than itself, they are so constructed as to admit light.

COMPETITIONS.

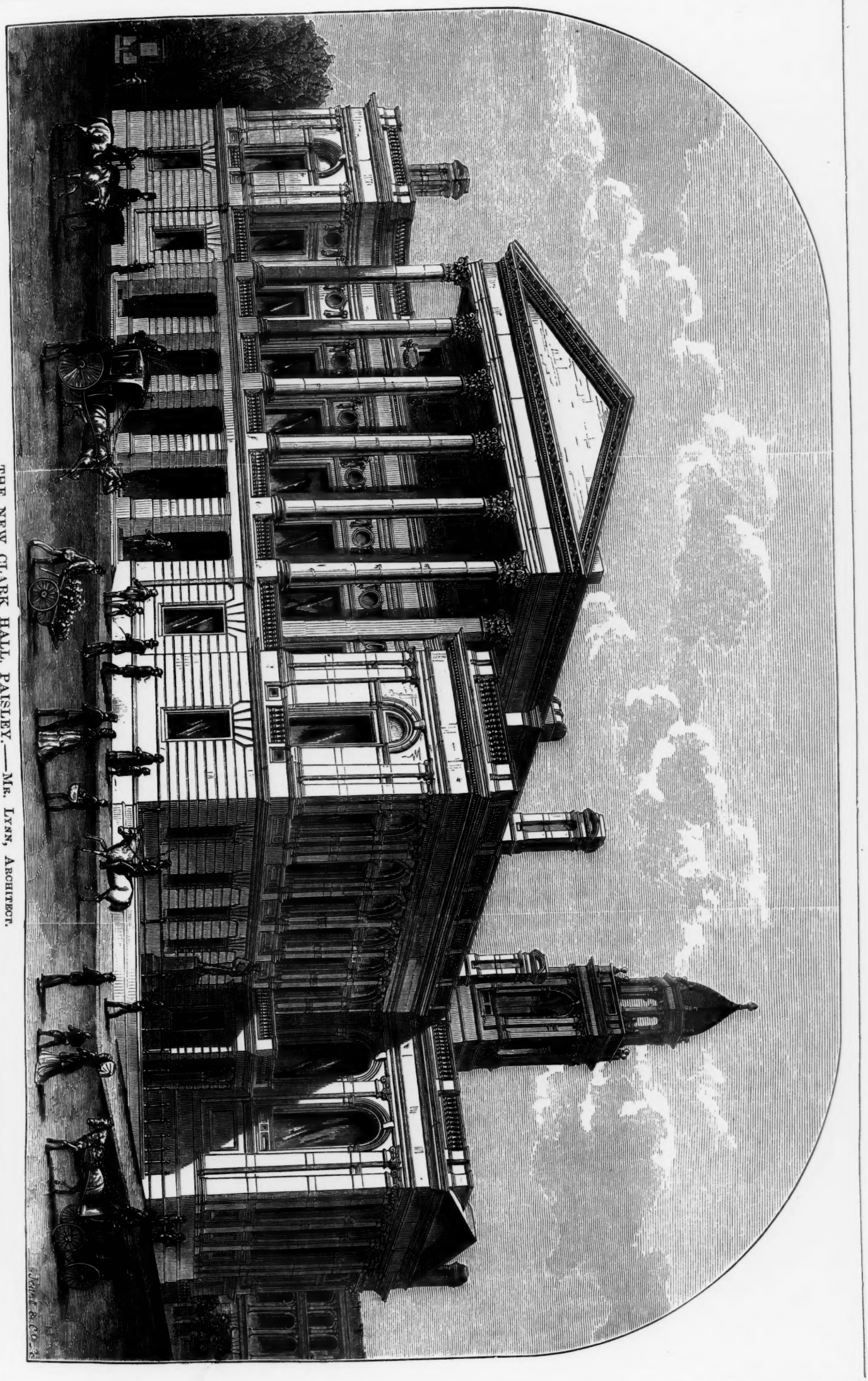
Forest of Dean School Board.—Previously to the last monthly meeting of the Forest of Dean School Board, held at the town-hall, Cinderford, a special committee met for the purpose of considering the question of plans for the Soudley schools. Nineteen architects were in competition, and these having been reduced to half a dozen, the committee resolved to recommend the plans of Mr. Moore, of Gloucester, subject, however, to a condition that a builder could be found to carry out the work not in excess by 10 per cent. of his estimates. As an alternative, the plans of Messrs. Haddon Brothers, of Hereford, architects, were approved. At the general meeting the recommendations of the committee were adopted.

Norwood Schools.—At the last meeting of the Lambeth Board of Guardians, the clerk reported that six architects had sent in plans and drawings, in answer to advertisement, for the rearrangement and partial rebuilding of the Norwood schools. Mr. Smith suggested that an architect of eminence should be employed to assist the Board in deciding which of the plans they would accept. Mr. Mills strongly deprecated any such course of action. He thought there were men at the Board having plenty of practical knowledge, and, in addition, knew exactly what they wanted done, and "therefore far more fit to judge than an architect, who might follow the rule of his profession, and go in for effect more than practical utility." Mr. Hearson suggested that if the members generally disagreed as to the plan to be selected, they should obtain the best professional assistance. It was resolved that this course should be adopted.

Public Works in Birmingham. — The Borough Surveyor, Mr. W. S. Till, has issued a report of works executed during the years 1874-7. The returns of new buildings of which plans have been submitted for approval show that in the year 1877 they numbered 3,053, as compared with 3,117 in 1876, 3,608 in 1875, and 1,788 in 1874.



NEW SYNAGOGUE IN STOCKHOLM.—Mr. F. W. Scholander, Architect.



THE NEW CLARK HALL, PAISLEY.—Mr. Lyon, Architect.

THE ELECTRIC LIGHT.

The Corporation of the City of London and the Metropolitan Board of Works are taking measures to test the practicability and utility of the electric light, and we may shortly expect to see the Holborn Viaduct and the Thames Embankment experimentally lighted up.

Mr. William Haywood, the Engineer and surveyor to the Commissioners of Sewers, has made a report to the Streets Committee of that body upon the electric light. Mr. Haywood describes at length the results of the experiments in Paris, glances at the character of the light, and deals with the cost of its application. He then passes to the consideration of using the electric light in the City, and upon this point he says:—

It will, firstly, be necessary to find situations for the steam engines and Grammes, and whether vacant ground, or the basements or vaults of premises be used, the accommodation will probably have to be paid for. The wires can be as readily laid beneath the footways, and the lamp-posts be as readily used here, as in Paris. It will have to be determined whether the electric lamps shall, as in Paris, be extinguished at midnight, and the gas-lamps be then lighted, or whether they shall be continued throughout the night. The climate of London and the habits of the people are different from those of Paris. It is not here customary to diminish the light after midnight, and there is not the margin of light to enable it to be done. If kept alight until midnight only, it is possible that one man can attend to each engine in a thoroughfare, and to the transfer of the electric current from time to time. I do not think he could do more, and it might not be safe to depend upon one man. It would be heavy work for one to attend to the lights if burning from sunset to sunrise during the long nights of winter. A workman during the day will have to replace the exhausted candles with fresh ones, and clean the lamps. It is said that in Paris they need scarcely any cleaning; in London, I think, they will want cleaning, for here the gas-lamps get much dirtier in a short space of time than they do in Paris. In Paris the chandeliers carry five Jablochkoff candles, which are sufficient for seven and a half hours' consumption. If the electric light be continued in London from sunset to sunrise during the winter, some arrangement must be made either for the chandelier to carry more candles, or for fresh candles to be introduced during the night into the chandelier, or for lamps to be used alternately. No doubt all this can be accomplished,—it is mentioned only to show what will have to be done. As comparison of cost will no doubt be the first point of consideration, it will have to be determined whether the streets shall have a much greater amount of light than is now given by the gas-lamps, or only sufficient electric light to give something more, say double the light from the gas. This would be the best way of arriving at a comparison of the cost of the lights, but not the best way of making a startling show of what the electric light can do. There are various points, therefore, to settle before a reliable estimate of the cost of lighting the public ways with the electric light or just comparison between its cost and that of gas can be arrived at. If the public ways are entirely lighted by electricity,—and I do not think any system will be permanently employed needing two different classes of light to be used nightly,—the possibility of an accident to a Gramme or steam-engine must be considered. In the event of this occurring, the whole of the lights dependent upon the inoperative apparatus would be extinguished, and the streets left in darkness. This contingency could only be obviated by having auxiliary engines ready, which would lead to considerable expense. It may be said that there is the chance of an accident occurring to a gas-holder, and of a whole district being placed in darkness, for such a thing has actually occurred, but experience has shown that the probability of such an occurrence is remote, whereas, out of a large number of motive engines and electrical machines, there is much probability of one or other going wrong at some period. Considering the facts placed before you, and that at present the electric fluid cannot be transmitted efficiently a greater distance from a station than about 1,000 yards, and considering the expense of providing stations, steam-engines, and electrical machines, with their attendants, it appears to me not probable that the electric light will compete in point of economy with gas for lighting the public ways. There are, however, places where the convenience of the large traffic might justify the expense of employing it during the busiest hours of darkness, such, for instance, as by King William's statue, at the space in front of the Mansion House, the circus at the foot of Ludgate-hill, Charing-cross, the circuses at the ends of Regent-street, the northern end of Westminster Bridge, and similar places where there is a great foot and carriage traffic during many hours after sunset. Using it on the Thames Embankment or in the centres of the parks, both of which places have been suggested, might no doubt make a brilliant and effective spectacle, but it would be waste of money, there being in neither place much traffic to benefit by the light. With regard to private establishments the conditions are different. In most large workshops and manufactories motive power, if not already existing, can be introduced, with possible advantage for other purposes, and worked relatively cheaper, than if employed only for public lighting, and there the electric light may, it is probable, even now be employed with economy. There also its superior hygienic qualities would be appreciated, and in many cases, but not in all, the absence of heat will be thought an advantage. In dwelling-houses, or in small workshops, where but few gas-lights are used, it will not, I think, be found economical. Such are the advantages which gas possesses in enabling any quantity of light to be obtained at the exact spot needed, and extinguished at once when done with, that until the electric light can be similarly divided and utilised it is not likely to supersede gas for limited consumption. Although I do not think that at present the electric light can compete with gas in point of economy for lighting the public ways, yet an ample experiment should be made to determine this point and to show its value for street illumination. There is no subject of recent years on which the public appears to entertain such great expectations as it does with regard to this new light, and, looking at the large interests which the Commission represents, I beg to recommend that as early as possible an ample experiment be made by lighting with it during the winter months one or more of the public thoroughfares within its jurisdiction. Queen Victoria-street and the Holborn Viaduct are both suitable for this purpose, each having subways. Queen Victoria-street is the longer of the two; but the Metropolitan Board of Works retains the subways under its control. The Commission would have to obtain permission to enter them, and inconvenience might arise owing to a divided jurisdiction. The Holborn Viaduct subways are under the control of the Commission, and I therefore recommend the Viaduct as a suitable place for making a trial of the electric light.

At a meeting of the Metropolitan Board of Works on the 18th inst., the Works and General Purposes Committee submitted the following report:—

"Your committee have proceeded upon the resolution of the Board of the 28th June last, referring it to them to consider and report as to the advisability of making an experiment with the electric light on the Victoria Embankment. In connexion with this reference, your committee have considered the letter referred by the Board on the 5th July last from Jules Gaudet, intimating his willingness to place before the Board all the information and details with regard to the mode of lighting the streets of London by electricity, as adopted by the Municipality of Paris. Your committee have also had before them communications from Mr. A. Apps, Mr. R. Applegarth, manager of the Electric Lighting Works, and Dr. R. Vassard, offering to supply information on the subject of the electric light. Your committee have conferred with your engineer and consulting chemist, and have received from those officers a report, in which they state that, having regard to the conflicting opinions which exist amongst those qualified to judge as to the present and future value and significance of the electric light, they consider it impossible to form a correct judgment as to its application, effects, and cost, without some considerable practical experience of its working. They, therefore, suggest that it would be desirable to make a large and continued experiment, and they propose that arrangements should be made to test the nature of the electric light along the whole length of the Victoria Embankment, a distance of about a mile and a quarter. They further suggest that if it were thought desirable, the experiment might be extended to Waterloo Bridge, and they submit with their report a letter received from M. Jules Gaudet, the agent in London of the Société Générale d'Électricité, offering to contribute to the experiment in the following manner:—

1. That a 20-light electric battery be placed at the service of the Metropolitan Board of Works on loan for a period of three months, to date from day of lighting up.
2. That twenty Jablochkoff lamps, commutators, globes, &c., be supplied in like manner for like period.
3. That an engineer and foreman of the Société Générale be appointed to superintend the erection and general organisation of the lighting apparatus.
4. That the Société Générale supply the necessary number of 'candles.'
5. That the Board of Works supply the motive power equal to 25-h.p., with driving-wheel, necessary bands, &c., all in first-rate working order.
6. That the Board of Works pay for all conductors (wires) and all standards for the lamps, materials, and labour for erection of same; also the travelling expenses, fees, and wages of the French engineer and foreman referred to for a period of fifteen days, a competent engineer and foreman of their own being engaged on the job from the first."

The report was adopted, two amendments in favour of postponement being negatived. It was incidentally stated by Mr. Richardson, who brought up the report, that the cost of the proposed experiments will be 600*l*.

UNIVERSITY AND CITY IMPROVEMENTS, OXFORD.

The *Oxford Journal* devotes considerable space to details of various new buildings and improvements which have been in progress during the past twelvemonths.

The University.—At Christ Church the walls of the new bell-tower have been completed. In Tom Quad the whole of the granite paving has been removed, the north-west corner, which was the last, having been lately finished, while the restoration of the stonework of the buildings is now completed, and gives the quadrangle quite a new appearance. The stone buttresses have all been erected around the quadrangle, the whole of the above work having been executed by Messrs. Symm & Co. Mr. G. Hill has executed the plumbing. Messrs. Wyatt have made considerable internal improvements in the residence of Archdeacon Palmer. New stone slating has been placed on the outbuildings of All Souls' College, and improvements have been effected in the butler's house and porter's lodge. Messrs. Wyatt have also erected a new wainscot oak screen, with ornamental lead and glass panels, carved work, &c., from the designs of Mr. H. J. Tollitt, architect. At Balliol College Messrs. Wyatt have placed new lead windows in the undergraduates' library. The new dining-hall and library at Keble College have been finished and opened. The hall is 127 ft. long by 35 ft. wide, and the library is 86 ft. long by 35 ft. wide; descriptions of both buildings were given at the time of opening. Messrs. Parnell, of Rugby, were the builders, and the architect was Mr. W. Butterfield. At University College, Messrs. Symm & Co. have inserted new stone in several of the windows in the large quadrangle, and similar work has been executed on the south side of the small quadrangle. The new house for the master is in course of erection in Logic-lane, Mr. Fitzwilliam being the clerk of the works here and at Christ Church. At Wadham College, Messrs. Wyatt have completed the alterations necessary for forming a new lecture-room, and have carried out new sanitary arrangements at the house of the Provost of Worcester College. At Oriel College, Westmoreland slates have replaced the Stonesfield, and the front of the college is being restored by Mr. Hobdell. At Merton College, Messrs. Fisher & Hobdell have carried out several works of restoration. At the University Museum, in the Parks, Messrs. Symm & Co. have erected a two-story building, as an addition to the chemical department. The style of the building, which is about 134 ft. in length by 24 ft. in depth, is in keeping with the rest of the Museum, and it has been erected from the designs of Mr. Dean, of Dublin. The addition is in a line with the front of the Museum, and is on the south side, and it is so near completion that it will be handed over to the curators in the course of a few weeks. A new lecture-room and library of Bath stone and Suffolk brick have been added to the Observatory in the Parks, erected in a style corresponding with the rest of the building. The astronomical department has also been extended. The builders are Messrs. Symm & Co. Extensive restorations are taking place at the Bodleian Library, the building being refaced and pinnacles reinstated. The work is being carried out by Messrs. Symm & Co. At the Radcliffe Library the same firm have made considerable improvements in the reading-room, in the shape of ventilation.

The Examination Schools for the University, on the site of the old Angel Hotel, in the High-street, have made considerable progress during the past twelve months. It will be remembered that Convocation twice rejected the plans submitted to them, but on the appointment of the third Delegacy a number of architects were invited to prepare designs, and that of Mr. T. G. Jackson having been chosen, the consent of Convocation was obtained, and about a year

has been spent in putting in the foundations. The plan consists of a quadrangle standing back from the High-street, surrounded by the examination buildings or "schools" on three sides, and open on the fourth side towards the east. Between the quadrangle and the High-street a block of buildings will be placed, containing a large hall, the offices for the clerk of the schools, rooms for examiners, and residence for a porter. By this arrangement the schools are completely shut out from the noise of the High-street. Nine *viva voce* schools, with some retiring-rooms for examiners, occupy the whole ground-floor round the quadrangle, from which all but one are lighted. Three large writing-schools and two *viva voce* schools occupy the first-floor, and are lighted from both sides. The writing-schools accommodate 200, 200, and 120 candidates respectively, seated at separate tables, and their area is so great as to make supervision by the examiner difficult, but this is met in some degree by the form of their construction. The great hall, towards High-street, will form a general vestibule, and, with two subsidiary halls, will form covered waiting-spaces for candidates, for which purpose also the quadrangle in fine weather will be available. There will also be entrances in Merton-street and King-street. The whole building will be artificially warmed and ventilated on Messrs. Haden's principle. The contract for the erection of the building has been taken by Mr. A. Estcourt, of Gloucester.

An important addition is now being made to the buildings of the Union Society. Owing to the present accommodation for the purposes of discussions being insufficient for the increasing numbers of the society, a new debating-hall was found necessary, and the foundation-stone of the building was laid by Sir Stafford Northcote on the 8th of May last. The dimensions of the hall are 70 ft. by 40 ft., with a height of 22 ft., and a gallery will be placed on all the four sides. The entrance is in the centre of one of the longest sides, and immediately facing the president's chair, the members' seats being placed in parallel rows facing the central gangway, and rising gradually towards each end of the room. The main entrance is approached by a vestibule 20 ft. in length by 9 ft. in width, and at the end of the vestibule is a projection on which rests the stone staircase leading to the gallery, and an arched recess over the vestibule will be filled with seats rising one above another, and facing the president's chair. The style of the building corresponds somewhat with the remainder of the premises, the material being red brick with terra-cotta dressings in the gallery. The ceiling will be "coved," with pitch-pine beams and mouldings, and the roof will be covered with Broseley tiles. Mr. A. Waterhouse is the architect, and Messrs. Parnell, of Rugby, the builders.

Among the *City* improvements we note that a range of buildings has been erected in Queen-street for Messrs. Hyde & Co., outfitters. The height from the foundation is 85 ft., divided into four stories, length 90 ft., and width 36 ft. The cost is between 8,000*l.* and 9,000*l.* The front throughout is formed of red Mansfield and Bath stone, the rear brick supplied by Oxford yards. Beneath is an extensive basement, and on the east side a spacious cart and wagon entrance for the wholesale department. Mr. F. Codd was the architect, and Messrs. Symm & Co. the builders.——Commodious warehouses of brick and Bath stone have been added to the establishment of Messrs. Grimbly, Hughes, & Dewe, Corn Market-street. They include a cellar, basement, warehouse, bacon-store, and smoke-room. Mr. Wilkinson was the architect, and Messrs. Symm & Co. the builders.——The new residence for Mr. A. G. V. Harcourt, Christ Church, at the bottom of Rose-place, Iffley-road, which is built in the Queen Anne style of architecture, is nearly completed. Mr. G. Castle is the builder.

The Liverpool Disaster.—Evidence as to the means of exit from the Colosseum Music-hall, Liverpool, the scene of the recent disaster, was given at the adjourned inquest on Wednesday. It was admitted that the broad staircase had been closed owing to differences between the lessee and the owners of the building, and that this was the best means of exit, and without it, according to the Liverpool Corporation surveyor, it would be the worst building to escape from he had ever seen. The inquiry was again adjourned.

OBITUARY.

Mr. T. A. Britton died suddenly on the 16th instant, after a protracted illness, at his residence, Lewisham. The deceased gentleman for many years filled the office of Surveyor to the Metropolitan Board of Works, having been appointed in the first year of the Board's existence, but having become incapacitated by severe attacks of rheumatic gout, he retired a few years back on a pension. Mr. Britton was an Associate of the Institute of Architects, and obtained the Institute silver medal for an essay on "Timber Trees." He was also the author of a "Treatise on Dry Rot in Timber," published by Messrs. Spon in 1875, and reviewed in these pages at the time of its appearance.

Rev. Canon Raines, F.S.A., died on the 17th inst., at Scarborough, in his seventy-fourth year. He was elected fellow of the Society of Antiquaries in 1843, and edited "Bishop Gastrell's Notitia Cestriensis," 1845 to 1850; "The Stanley Papers"; "Nicholas Apheton's Journal"; "Memoirs of James, seventh Earl of Derby"; "History of the Lancashire Chantries," &c.

Dr. David Laing, F.S.A. Scot., died at Edinburgh on the 19th inst., in his eighty-sixth year. More than fifty years ago (in 1826) he was a partner in the firm of William and David Laing, booksellers, South Bridge, having been elected two years previously fellow of the Scottish Society of Antiquaries. He served the Society in several important offices, acting for fifteen years as treasurer, and for two years as secretary; besides filling for more than one term the position of vice-president, and for upwards of twenty years in the capacity of foreign secretary, keeping Scottish archæology *en rapport* with the labours of Continental antiquaries. His papers are to be found in every volume of the Society's Transactions. During a great part of his connexion with the Society, Mr. Laing served as one of the permanent working members of the committee for editing the Transactions; and to him fell the lion's share of the labour of redacting the four volumes of the "Archæologia Scotica," containing the Society's proceedings from 1780 to 1852, when the present series of Transactions was commenced.

Mr. T. W. Wonfor, the curator of the Brighton Free Library and Museum, died on the 20th inst., after an illness of about a month.

ARCHÆOLOGICAL NEWS FROM GREECE.

The collection of Mycene antiquities at Athens, to which similar objects found in the sepulchre of Spata, near Athens, have been added, has received again an interesting addition in the ornaments of the jeweller's art and the pottery of the most ancient Greek style which have been discovered during the summer just passed, through the exertions of the Archæological Society, in the grottos near Nauplia, at the foot of the Palamidi. Those caverns, mentioned already by Strabo, the arrangement of which was ascribed to the time of the Cyclops, have now been recognised as rock burial-places, similar to those found at Spata. Thus the monuments giving us an illustration of the most ancient period of Greek culture, when it was still under the influence of Asia, have been fortunately increased.

A very curious discovery has just been made at Marathon also, as we learn from the *Kölnische Zeitung*. Marathon belonged to a union of four towns, the so-called Tetrapolis, of which we knew that it had preserved institutions singular in many respects. Now an inscription has been found (on which Dr. Lampros reports in the *Ephemeris* of September $\frac{14}{26}$) in which the inhabitants of the Tetrapolis dedicate an object to Dionysos as a distinct confederation with its own archon. We find the four towns of the Tetrapolis represented in the College of Four Providers of Victims. It is to be hoped that further discoveries will follow this find.

The topographical survey of Attica which the German Archæological Institute has undertaken, with the assistance of the German great general staff, will be resumed again with full energy this autumn. The first-fruit of this labour (an Atlas of Athens, in twelve sheets) is now completed; the second section (the harbours of Athens) is preparing.

The excavations at Olympia were commenced again on Oct. 14. The south front of the temple of Zeus will be taken in hand first, as there seems to be most prospect for the completion of the sculptures of the entablatures. The exhibition in the Campo Santo at Berlin of what has already been found at Olympia has been unavoidably delayed by the great difficulties attending the joining of the plaster casts. It is expected, however, that the work will be completed in a few weeks.

THE PARIS EXHIBITION AWARDS.

Although no official list of prize-gainers had been published, Mr. Cunliffe Owen had privately informed all who were in that position, so far as regarded the industrial sections. By some accident, however, up to Friday in last week, the architects to whom distinctions had been awarded were without any intimation of it beyond what we had been able, exclusively, to give them in our number for August 3; and we had more than one inquiry as the time drew close touching the correctness of our statement. We give the official list, and it will be seen that it agrees precisely with that we have already published:—

Third Section, Class 4.—Drawing and Architectural Models.—E. M. Barry, R.A., medal of honour; T. G. Jackson, honourable mention; Horace Jones, bronze medal; J. L. Pearson, A.R.A., gold medal; J. P. Seddon, bronze medal; Norman Shaw, A.R.A., silver medal; G. E. Street, R.A., gold medal; A. Waterhouse, Rappel of medal of honour; T. H. Wyatt, silver medal.

THE WATER SUPPLY OF THE METROPOLIS.

At the last meeting of the Metropolitan Board of Works, the Works and General Purposes Committee reported the proceedings of the Committee upon the resolution of the Board of the 4th inst., referring it to the committee to consider and report upon the advisability of preparing a Bill to be laid before Parliament providing for the acquisition by the Board of the interests of the several companies now supplying the metropolis with water. The Committee reported that they had been unable to come to any conclusion.

In relation to this matter, Mr. Richardson (acting for Mr. Selway) moved,—

"That it be referred to a Parliamentary Committee to prepare and lay before the Board a Bill for the compulsory purchase of the interests of the metropolitan water companies, with power to issue the necessary Parliamentary notices, and that the whole subject be referred to the Works and General Purposes Committee, with power to confer with her Majesty's Government, with a view to obtain their approval of the same."

Mr. Fell seconded the motion.

Mr. Runtz moved the following amendment,—

"That no action be taken by the Board towards obtaining power to acquire the undertakings of the metropolitan water companies until the views of her Majesty's Government on the subject have been ascertained; and that the Works and General Purposes Committee be authorised to communicate with the Government for the purpose of ascertaining their views accordingly."

After a long and exceedingly acrimonious discussion, in no way adding to the dignity of the Board, a division was taken, when 9 voted for the amendment and 14 against it.

Mr. Munro then moved as an amendment to Mr. Richardson's motion to insert the word "only" after the word "power," and to add to the motion the words "previously to any further expenditure being incurred," so that the motion might read as follows:—

"That it be referred to the Parliamentary Committee to prepare and lay before the Board a Bill for the compulsory purchase of the interests of the metropolitan water companies, with power only to issue the necessary Parliamentary notices, and that the whole subject be referred to the Works and General Purposes Committee, with power to confer with her Majesty's Government, with a view to obtain their approval of the same, previously to any further expenditure being incurred."

This amendment, having been seconded by Mr. Roche, was accepted by Mr. Richardson, and carried by 16 to 6.

CONDITION OF TENBY.

We have received a letter from Mr. W. Burns commenting on Mr. Morley's communication (p. 1023), but we decline to carry on the discussion. We cannot say that the borough surveyor's letter was entirely satisfactory, and we advise that gentleman and the other authorities to set themselves vigorously to work to bring about a better state of things than at present exists in beautiful Tenby.

ROMAN REMAINS AT IRCHESTER.

As briefly mentioned by us last week, the Rev. R. S. Baker read a paper at the recent meeting of the Architectural Society for the Archdeaconries of Northampton and Oakham, on "Excavations at Irchester Camp." The paper took the form of a report of a committee appointed by the Society for the purpose of conducting the excavations, and of which committee Mr. Baker has acted as hon. sec. and treasurer. The report says:—The primary motive for this exploration was the anticipated visit of the Royal Archæological Institute of Great Britain and Ireland. In answer to an appeal made within the county for funds for this purpose, a sum of nearly 100*l.* was readily subscribed. Digging was commenced at Irchester on the 3rd of June, and continued for seven weeks, by three navvies, under a responsible foreman, Mr. John Eldred, of Wellingborough, the secretary giving the work his daily supervision. The work of the first seven weeks was necessarily restricted to the exterior, as the area of the camp was under wheat. The sites of some extramural Roman buildings, 300 yards east of the camp, were, however, explored, and some trenches cut through a portion of the Roman cemetery on Mr. Arkwright's property, some 500 yards east of the camp. Here also was emptied a Roman well, found by the ironstone diggers. The Royal Archæological Institute paid their long-looked-for visit to the camp on the 1st of August, when about seven minutes was allowed to see and hear the result of seven weeks' hard work! So much for archæology at a gallop. Of course, much was left unseen by these pleasant but fugitive antiquaries. The second series of explorations was commenced as soon as the wheat was cut, and while the shocks were still standing, by the kind permission of Mr. Blott, the lessee of the farm. A staff of from six to eight men has been working six weeks up to last Saturday, within the camp. We began by prospecting about the field (fishing, as we call it) with iron bars, and wherever we found solid foundations, there we dug; and having found a wall, traced it out to its ramifications till it came to an end. We were surprised to find solid foundations within (in some places) 6 in. of the surface. In this way we have laid bare a network of buildings, roads, and causeways in the limited portion of the 20 acres we have been able to explore. Among these buildings were two circular ones,—one near the middle of the camp, 50 ft. in diameter; the other, close to the south-west corner, is 30 ft. in diameter, the latter with walls very much on the batter. We have bared these intramural walls to their lowest courses; they are generally well and squarely built, and often with a footing (sometimes more than one) at the bottom, generally with an intermixture of "herring bone" with horizontal courses; a few have as many as eight courses in depth, the generality not more than two or three. As a rule, they are built of the limestone of the near neighbourhood (the camp itself stands upon ironstone). In a few cases limestone and red-stone are intermixed. We have had, within the last few days, the camp surveyed, with a view to map out all those intricate foundations and the exterior walls. Among this labyrinth of houses we found roads (of Macadamised gravel and pebbles) and causeways of limestone, either laid down roughly or pitched on edge, in both cases much worn by feet. Often we have found causeway over causeway, sometimes three deep, and foundations over foundations, all tending to the demonstration of its having been built and re-built upon age after age during Roman times. The coins found also prove its being inhabited during the whole time of the Roman Empire. We have dug pits on all the four boundaries in order to verify the line of the walls of the camp, and in most cases we have not been disappointed. But, as a rule, we have to go very deep, as the ruthless hand of the destroyer has taken out all but the three or four lower courses of the foundations, which are of limestone laid herring-bone wise, as a rule, and 9 ft. to 10 ft. wide. We have found enough of these foundations to map the line of the wall correctly almost of the entire camp. We have been fortunate enough to discover the fragmentary remains of two of the gateways—the west and the south. The foundations of the west gateway have been photographed, and they are in course of being accurately planned. They are extremely puzzling, and seem to indicate the ruins of the gate at some early period, and its hurried repair on different lines. The north gate we have not yet discovered; and the east we cannot explore owing to the present entrance of the field being at that very spot. We found a statue in stone about two-thirds full size of a male deity possibly—perhaps Apollo—minus head, arms, and legs; it had been degraded to the use of a building stone in a later Roman wall, reminding one of Horace's fig-tree deity. In close proximity to the statue we found (in the earth near the surface) a large heavy half-capital of rather good design and execution, but broken in its volutes. The diameter of its base is 2 ft. 6 in. This block of stone unfortunately had a shake, and it came in halves across the middle. A large circular stone, something of the form of a grindstone, 2 ft. 10 in. in diameter, was also turned up in another part. We thought it first a segment of a shaft of a column; but one side has been hollowed out, so as to give it the appearance of a fragment of a rude font. Not far from this was found the apparent foundation of the base of a column, 3 ft. 8 in. in diameter, surrounded by a much-worn pitched pavement; but although we have fished we have not found any more corresponding bases in its neighbourhood. We have found numbers of Collyweston slates cut of a diamond form, heavy and large as a rule, pierced with holes for hanging them, and with the iron nails often still *in situ;* also a few pieces of blue Welsh slate, the proper cleavage of which did not seem understood; also red roofing tiles, with flanges very heavy, but it is doubtful whether they were not flue-tiles. In proximity to some of the house-walls the earth is full of fragments of plaster with fresco painting upon it, but not sufficiently large to make out the design. The colours when washed came out brightly; the colours used are much like those of the Mediæval church artist. On one small piece of plain plaster are a few words in Greek characters, and a running hand scratched with a fine sharp point.

ART AND RELIGION.

The Bishop-Suffragan of Nottingham (Dr. Trollope), speaking at the Lincoln Diocesan Conference, held in Nottingham on the 10th inst., said:—Several reasons have led to the assemblage of our Diocesan Conference in this great town at the present time, instead of at Lincoln; but had there been no other reason, such an important event as the recent opening of the Castle Museum here by the Prince and Princess of Wales would have served to attract the members of the Conference to Nottingham. This event is a triumph of art, so that it may be asked, What has a religious body, such as our Conference is, or the Church of this diocese by representation, to do with it? The reply to which is, that art is one of the honoured handmaids of our Church at large, who has ever served her will, and is still doing so, whence we gladly hail her enthronement on the Castle Hill of Nottingham, and look forward with hopefulness to the great benefits she is likely to confer upon the multitudes around and beneath her through her inauguration there. It has been truly said that the growth of the civilisation of nations may be gauged by the corresponding character of their acts; but so also may the religious devotion of nations be, at least to a certain extent, tested by the use of their art-power, as well as fostered by its thoughtful and legitimate application. As art was employed by the divinely-instructed Moses in the construction of the ark of the tabernacle, and as this was extensively used by the wise Solomon in the erection of the temple, and the provision of its numerous gold and silver vessels, as an aid to the fulfilment of the old law, so also was it used by the fathers of the Christian Church as soon as they had risen from their first feebleness, and had acquired art-power, as is still touchingly exhibited by those symbols of their faith and hope carved or painted upon their sepulchral memorials, serving to confirm also the faith and hope of their children, and their children's children, as records in many cases of the blood shed by them and their forefathers as Christian martyrs, as well as the most precious blood of Christ lovingly offered for their salvation. These arts, thus early used, were ever after fostered by the Church as subordinate aids to devotion, as with skill in the application of metals and precious stones for the use and adornment of houses of God; and, no doubt, such arts have had a good influence, tending to promote devotional feelings in many hearts, although others are utterly insensible with respect to art; and the use of it even in the service of God and his Church on earth, has been abused, and is still liable to abuse. Time will not allow me to advert even shortly to examples of ancient art of a devotional character, and to its enduring influence for good; but unless unendued with any art appreciation, it would, I think, be difficult for most to look upon the paintings of the devout Fra Angelica, of Fiesole, without emotion, and especially as the holiness of their character may be attributed to the earnest prayer for a blessing upon his art, whenever he was about to practise it; such, for instance, as in his well-known painting of the Great Judgment Day, through the heavenly purity impressed upon the representations of the elect, or upon angels, which it was his delight to depict, as far as man can do so, through the Divine aid. So also, who that is thoughtful does not recognise the wisdom of using sculpture in the service of the Church, through the ancient example of that art extending along the west front of our great cathedral of Lincoln, although rudely executed, and now dislocated and mutilated by the hand of man, and scored and worn by the corroding work of six centuries of time; who does not appreciate the beauty of the later vigorous sculptures of its angel choir, and, after due study, is not also hence reminded of the blessed scheme of man's redemption; and who may not still gather up the value of the skilled use of metals, when, in the same almost matchless house he examines its ancient iron choir-gates, in common with coeval work still also remaining in the holy city of Jerusalem, although, unhappily, our cathedral treasury has long ago been robbed of its gold and silver work, enriched with pearls of great price and interest? Gladly, then, do we welcome a grand and new school of art that has now been founded under royal auspices at Nottingham, and has sprung up with strong fresh life on the very spot where a fearful fire once raged, and wilful destruction ensued through the temporary madness of the people. May this act of creation, indicative of a sense of peaceful security, and wrought for the benefit of all classes of this great populous town in which we are now assembled, and far beyond it, in some measure serve to expiate the evil of the past, and may Nottingham Castle henceforth be ever regarded as the seat of the fine arts, instead of an ancient stronghold of war or strife. In conclusion, I beg to move the following resolution:—

"That this Conference offers its cordial congratulations to the municipality and borough of Nottingham on the completion of their magnificent Museum of Art so auspiciously opened by their Royal Highnesses the Prince and Princess of Wales on July 3rd last, and begs leave to express its earnest hope that this noble institution may tend to promote the moral, intellectual, and spiritual welfare and happiness of all for whose benefit it is designed."

Canon Morse seconded the resolution, which was also supported by the Bishop of Lincoln, and carried unanimously.

THE NEW AGRICULTURAL MUSEUM, BERLIN.

The new Agricultural Museum building, which is now in course of erection in Berlin, is expected to be completed by the spring of the year 1880. The inaugural ceremony will take place at the same time as the opening of an international exhibition of all kinds of articles, apparatus, &c., having to do with fishing, fisheries, and pisciculture generally. The exhibition in question has been started under the auspices of the German Piscatorial Society, the patron of which, the Imperial Crown Prince of Germany, is warmly entering into the project.

Building Bye-laws for the Metropolis.—At the meeting of the Metropolitan Board of Works, on the 18th inst., the Building Act Committee was authorised to send the bye-laws, made under the 16th section of the Metropolis Management and Building Acts Amendment Act, 1878, with respect to the foundations and sites of buildings and other matters, to the District Surveyors' Association in order to ascertain their views with respect to such by-laws, before they are advertised and sent for confirmation to one of Her Majesty's Principal Secretaries of State, as required by the Act. As we reported last week (p. 1,099) the bye-laws are also to be submitted to the Royal Institute of British Architects and the Institution of Surveyors.

PRESSURE OF THE WIND ON STRUCTURES.

Mr. John Holden, architect, of Manchester, writes, with reference to the statement, "that the obelisk as it stands is already calculated to bear a pressure of 90 lb. to the square foot, whereas the force of no hurricane is believed to exceed 25 lb. to the foot,"—on the 7th day of February, 1868, the pressure registered at the Liverpool Observatory was over 60 lb. to the square foot. The instrument, in charge of Mr. Hartnup, only registered up to 60 lb., but his opinion (stated at the time in the papers) was that the pressure reached somewhere between 70 lb. and 80 lb. to the square foot.

At Liverpool, on the 27th of September, 1875, the pressure registered was 70 lb. to the square foot; and at the same place some time in April, 1867, the pressure was 45 lb.

At Sydney, Australia, on the 10th of September, 1876, the Government Astronomer reports "that the wind in some of the gusts lasting several minutes attained the extraordinary velocity of 153 miles an hour, equal to a pressure of 117 lb. to the square foot; and during twelve minutes between twelve and half-past the velocity of the wind was 112 miles per hour."—(See the *Australian Sketcher*, Melbourne, Sept. 30, 1876.) The question of the velocity and pressure of the wind is of great importance, especially in the manufacturing districts; and for many years the firm of which I am a member, in calculating the stability of factory chimneys, have assumed the pressure to be not less than 80 lb. to 90 lb. on the square foot.

LOCAL GOVERNMENT BOARD INQUIRIES.

Handsworth.—Major Tulloch, R.E., has been holding an inquiry at the Local Board Offices, Handsworth, with reference to an application which had been made to the Local Government Board by the Handsworth Local Board for sanction to borrow a sum of 100,000*l.* for works of sewerage, and 7,000*l.* for the completion of the Public Library and Local Board Offices. There was no opposition to the application. The question of the loan for the completion of the public buildings was first entered upon, and the clerk explained to the inspector that the Board had already received two loans of 9,000*l.* and 2,000*l.* respectively on account of the buildings. To carry out all that still remained to be done a further loan of 9,000*l.*,—and not 7,000*l.*, as had been stated by an inadvertence in the application to the Local Government Board,—would be required. The inspector then proceeded with the inquiry into the 100,000*l.* loan for sewerage works. The clerk stated that the joint sewers were to carry sewage from both Handsworth and Aston down to the Saltley works. The loan now proposed to be borrowed would be for the construction of sewers for the district of Handsworth, quite independent of any other authority. Mr. Humber, the engineer, explained the plans in connexion with the proposed works, and mentioned that the length of the sewers would be as follows:—No. 1, 2 miles 1,055 yards; 2, 2 miles 116 yards; 3, 2 miles 1,444 yards; and 4, 2 miles 34 yards; making a total length of 9 miles 878 yards. These were intercepting sewers only, and there would be in addition all the arterial drains in the district. The clerk stated that the Board did not purpose asking for more than 60,000*l.* or 70,000*l.* at present, because that amount would be sufficient to drain the part of the district that was populated.

Swinton.—The Bridgewater Trustees having threatened to apply for an injunction against the Swinton Local Board of Health to abstain from polluting a stream called the Folly Brook, by discharging their sewage into it, the Board applied to the Local Government Board for an order declaring that the third section of the Rivers Pollution Prevention Act, 1876, shall not be in operation until the expiration of a certain period to be limited in the order, and Mr. John Thornhill Harrison, C.E., has attended at the offices of the Swinton Board to inquire into the matter. From what was stated in the course of the inquiry it appears that at present the sewerage of the Swinton Local Board district is very incomplete, and the works that already exist do not give satisfaction, inasmuch as part of the sewage finds its way into Folly Brook, part of which runs through the Barton Local Board district and through the property of the Bridgewater Trustees. A nuisance was caused thereby. The inspector, having heard the views of the three parties, said he should recommend that an order be made granting protection to the Swinton Board for three months from the date of the order upon the understanding that within the three months, and without any delay, the Board make application for sanction to carry out a sewerage scheme which would entirely divert the sewage from Folly Brook; and if they did this the Local Government Board would then extend the protection for nine months longer to give the Board time to complete the work.

Newton Heath.—On the 16th inst. Mr. Arnold Taylor opened an inquiry at the Town-hall, Newton Heath, relative to the application of the Newton Heath Local Board for the loan of 7,500*l.* for works of private street improvement. Mr. Taylor expressed surprise, on examining the priced specifications, that whilst the sewers were calculated to cost 902*l.*, the gullies and manholes were put down as 741*l.* He was of opinion that the expenditure might be approvingly curtailed by the adoption of fewer manholes in the plans. No opposition was offered to the Board's scheme.

Cambridge.—Major Tulloch held an inquiry at Cambridge on the 16th and 17th inst. in reference to the drainage of the town and the alleged pollution of the River Cam. The inquiry was held in consequence of a complaint made under the 299th Section of the Public Health Act. At the close of the inquiry the Inspector stated that he had visited the sewer outfalls and been rowed down to Baitsbite. The state of the stream at the outfalls was most disgusting. The Sanitary Authority could not expect a Bill of indemnity from the Local Government Board under the Rivers Pollution Prevention Act, as they had done nothing to render the sewage matter harmless before it entered the river. They were polluting the river, and, of course, came under the penalties of the Act. The Local Government Board had issued a report drawn by Mr. C. S. Read, M.P., and Mr. Rawlinson, showing that the best mode of dealing with sewage was by applying it to land, and this plan had been successfully adopted by many towns. There was nothing peculiar to Cambridge to prevent a move being made, and he advised the authorities not to wait until an injunction had been obtained against them. He recommended them to call in a competent engineer, and construct an intercepting sewer with as little delay as possible. That would be of service in whatever system was adopted for the treatment of the sewage. [At a meeting of the Cambridge Improvement Board on Tuesday, it was resolved that immediate steps be taken for diverting the sewage of the town from the river Cam, and that Sir Joseph Bazalgette be requested to advise the Board as to the best mode of doing so.]

Bewdley.—Mr. S. J. Smith, C.E., one of the inspectors under the Local Government Board, has held an inquiry at Bewdley relative to the proposal of the Council to obtain powers to sell sufficient Corporation stock to carry out a system of drainage along the two quays, and also to improve the quays. A sewer, the length of the two quays, was to be constructed, to intercept the present numerous small drains and outlets into the Severn, and to carry the sewage along the quays, emptying it into the Severn at one point, below Lax-lane. Mr. Knowles, the former surveyor of the borough, described the nature and condition of the present drains, all of which at present emptied into the Severn—not more than one-third of the houses draining into the sewers. Mr. Baker, C.E., of Kidderminster, having explained the nature of the alterations proposed, the inspector called attention to certain sections of the Rivers Pollution Act, which prohibited the construction of new channels emptying into the river, and also compelled those who emptied sewage into a river to take the best possible means to render it harmless. The Town Clerk replied that the Council were aware of the provisions of the Act, but urged that no more sewage would go into the Severn by the proposed scheme than at present. Mr. Willis-Bund said the Fishery Board were determined to oppose the formation of all new channels which emptied into the river, and he opposed the scheme on the ground that it proposed to carry out certain works which were illegal.

Southam.—Mr. Robert Morgan, C.E., has held an inquiry at Southam relative to an application made by the Rural Sanitary Authority for sanction to borrow 2,000*l.*, to enable them to carry out a scheme for the disposal of the sewage. Some time ago the sewage of Southam was taken out, at a cost of 1,000*l.*, to a point just below the workhouse, where, after settling in two tanks, the overflow was allowed to pass into a brook. In course of time this brook became much polluted and very offensive, and the adjoining landowner threatened to obtain a restraining injunction if the nuisance was not remedied. Mr. Pritchard, C.E., of Warwick, was called in, and in October, 1877, he submitted a report proposing to take the sewage to a three-acre field near Welshman's Road, and there purify it by the intermittent downward filtration system. In reply to Mr. Morgan, the clerk stated that no arrangement had been entered into for acquiring the land, as the Sanitary Authority considered it would be the best course to obtain the approval of the Local Government Board to the scheme first, before they incurred expense in that direction. Mr. Morgan said the sanction would not be granted until some definite arrangement for the purchase or lease of the land was before him.

Leek.—Mr. J. Thornhill Harrison has held an inquiry at Leek relative to the application of the Leek Improvement Commissioners to borrow the sum of 12,000*l.* for gasworks and markets. There was a large attendance of commissioners and ratepayers. The Law Clerk said the sums the Board desired to borrow were 4,000*l.* for gasholder and tank, 465*l.* for extension of mains in new streets, 1,160*l.* for extension of retorts, 2,368*l.* for extension of cattle-market, 1,000*l.* to pay off mortgage on the same, 2,400*l.* for purchase of silk-mill and seven cottages, and 700*l.* for a weighing-machine and construction of offices. Opposition was offered to the markets scheme, especially to a proposal to erect slaughterhouses within the markets.

BUILDINGS FOR POOR LAW ADMINISTRATION.

Christchurch.—At a recent meeting of the Christchurch Guardians, Messrs. Creeke & Burton, architects, Bournemouth, attended and explained the modified plans of the new workhouse. It was decided to forward the plans to the Local Government Board for final approval.

Kensington.—On the 7th inst. the new casual-wards on the cellular system, which the Kensington Guardians have erected at Mary-place, Notting-hill, were opened for the reception of vagrants. They have been erected by Messrs. Lathey Brothers, at a cost of nearly 5,000*l.*, from the plans of Messrs. A. & C. Harston, architects.

Barrow-in-Furness.—Mrs. Schneider, wife of the Mayor of Barrow, has laid the foundation-stone of a new workhouse for the parish of Barrow, which is now in progress of erection at Roose. About two years ago Barrow parish was severed from the Ulverstone Union in order to promote a better administration of the poor-laws, and since then a temporary workhouse has been used. The new building is estimated to cost from 14,000*l.* to 15,000*l.*, the architect being Mr. J. G. Macintosh.

Kingston-upon-Thames.—Alterations and additions to the workhouse here are about to be carried out, according to plans prepared by Mr. Luck, architect.

Darenth.—At a recent meeting of the Metropolitan Asylums Board it was reported that the works at the new asylum at Darenth were progressing satisfactorily, and those relating to the engineering department were nearly completed, whilst the roofing on the chapel and dining-hall, as well as the building contract generally, was being pushed forward. The kitchen and laundry were nearly completed, and the school-fittings were in course of delivery. In reference to some comments which have been made with regard to an intended outlay of some 300 guineas for a clock to be placed in the tower of the school-building, the report suggested that the Local Government Board be informed that the clock alluded to is intended not only for the schools, but also for the Adult Imbecile Asylum shortly to be erected, and that the extra weight of bell which it has been found necessary to provide in order that the same could be heard over the entire premises will account in some measure for the cost incurred. Estimates had been received from the architects of 400*l.* for porter's lodge, with fittings; and for wrought-iron enclosures and gates to lobbies and covered-ways, 310*l.*

SHIRE-HALL, BEDFORD.

At the Bedfordshire Quarter Sessions last week, Mr. Waterhouse's plans for additions and alterations at the Shire-hall, Bedford, were approved, and instructions were given to obtain tenders. A detailed report was presented by Mr. Waterhouse, in which he said the plans showed that the existing buildings are to be left as much as possible in their present state. It is proposed to alter and enlarge the windows on the sides; and the court on the west side of the present Shire-hall is to be divided into two stories by a floor, each floor to be divided into three different offices. With regard to the new buildings, it is suggested that the Crown Court should be 46 ft. by 32 ft., and the Civil Court 46 ft. by 31 ft. The courts are to have each a long narrow gallery over a portion of the main corridor approached from the head of the principal stairs. The portion of the court devoted to the public will be so arranged as to be approached either from the Shire-hall or from the exterior of the building by the side entrance, while the judges can either approach the Bench by passing direct through the Shire-hall and their retiring-rooms, or by entering the building on the west side. On the corridor side of the court is placed the witness-box, half-way between the judge and the reporters, and immediately opposite the jury; also opposite a large window, so that the light shall be direct upon the face of the occupants of the box. Judges' retiring-rooms are arranged, and the barristers' room, looking out upon the river, adjoins the solicitors'. Jury retiring-rooms will be provided, which it is thought may also be used as jury waiting-rooms, as it is considered improbable two juries will retire at one time. There is an indictment office, and upstairs a grand jury-room, 44 ft. by 27 ft., with bay-windows looking up and down the river. A retiring-room is attached in the rear, and there is also a committee-room, 31 ft. by 23 ft. It should be observed that when the north front is rebuilt the last-mentioned room will take the place of the committee-room or council-chamber at present leading out of the Shire-hall. Opposite the door of the grand jury-room there will be a door leading into the grand jury gallery in the Crown Court. On the basement will be arranged two groups of cells,—thirteen in all, nine for males and four for females. There are besides on this floor the borough strong-room, police-room, and public conveniences. It is proposed to heat the court by hot-air and hot-water arrangements, such as have been employed in the Assize Court at Manchester, and other similar buildings, by Messrs. Haden, of Trowbridge, the foul air being carried by two bridge trunks from the roofs of the courts themselves into the foul-air shaft which surrounds the flue of the heating apparatus. Ample arrangements are made for lighting, and the various important rooms have lavatories, closets, &c., attached. The architect proposes that the building be constructed of red brick, with terra-cotta dressings, and be covered with Broseley tiles or with green Westmoreland slates.

CATHEDRAL ITEMS.

Edinburgh.—The *Scotsman* understands that, at a meeting of the Lord Provost's and Law Committees of the Edinburgh Town Council, held on the 18th inst., a deputation from the Restoration Committee of St. Giles's Cathedral, headed by Dr. William Chambers, was received. It would appear that technical objections have presented themselves to the Ecclesiastical Commissioners in regard to the giving up, without judicial or Parliamentary sanction, of the "custody" of parts of the edifice of St. Giles's, and that these stand in the way of the Restoration Committee proceeding with its work. In the course of the conference which took place, a general feeling was expressed in favour of having this difficulty, if possible, removed, in order that the old cathedral may be restored.

Chester.—Canon Ryle, preaching in Chester Cathedral recently, said that thirty-seven years had passed away since he was in the cathedral, and now everything was so much better and so much improved that he might well be excused for saying that he hardly remembered the old cathedral. The *Chester Chronicle*, commenting on the statement by a contemporary that the cathedral has been architecturally ruined by Dean Howson and Sir Gilbert Scott, at an expense of 90,000*l.*, and that "all that was really needed for the preservation of the old church in a genuine condition might have been done by an engineer for a tenth part of the 90,000*l.*," says:—"We have scarcely the patience to argue seriously with a writer who would put an engineer at work to restore a glorious old fane such as our cathedral just in the same way as he would an old bridge."

Winchester.—A new brass lectern, by Messrs. Hart, Son, Peard, & Co., has lately been placed in the nave of Winchester Cathedral as a memorial of the late Lieut.-Col. Williamson. It has a circular base, of a graduated character, resting on three lions.

SOUTHAMPTON.

Proposed New Public Offices.—The *Hampshire Advertiser* says that there are now in the Audit House plans, which have been prepared by Mr. J. Lemon, of the proposed new public offices. These are arranged on one side of the room, and on the opposite side are the plans which he has prepared for altering the Audit House buildings, and converting them into public offices. The latter plans have been approved by the Public Offices Committee, and, if adopted, the Council Chamber will remain as at present, but the buildings between that and Messrs. Oakley & Watling's premises will be pulled down, as well as the back premises, as far as the Green Market, and rebuilt, when office accommodation will be provided for the various Corporation officials, as well as a committee-room, the Mayor's parlour, and Mayor's reception room. The front of the new portion of the building will be uniform in style with the Audit House, and where the entrances to the market now are will be placed large windows. The total cost of these alterations is estimated at about 6,000*l.* By the adoption of the other plans the whole of the present building will be demolished, and an entirely new structure erected, the front of which will be of a much more showy character, with something of the Italian style. The same accommodation will be provided in this as in the other plan, but the Council chamber will be placed at the rear, so as to be out of the way of noise in the street, and the reception-room will take the place of the present Council chamber. The probable cost of the new building will be about 20,000*l.* The Council has yet to decide which plan shall be adopted.

The Bargate.—A correspondent of the same paper discusses the question "Is the Bargate to come down?" He says that the obstruction caused by it to the traffic is so intolerable "that neither the Board of Trade nor the public will put up with the grievance," and adds,—

> "The only means of saving the ancient structure is, I think, to widen the middle passage to the extent of 4 ft. or 5 ft., so as to allow two vehicles to pass and repass at the same time. Whether this can be accomplished by means of iron columns or improved masonry is a matter for architects to determine; but as the arch at the northern side is in a state of decay, and needs repair, the question of economically combining utility with the preservation of our monuments ought not to be irreconcileable."

On the other hand, we note that "I. C. U.," the writer of the entertaining "Notes by the Way" in the *Hampshire Independent*, strongly protests against the removal of the gate, and suggests that if alteration be wanted, some of the adjoining properties should be purchased and removed, so as to allow of the formation of a carriage-road on both sides of the Bar, and of the restoration of its flanking towers.

New Sea Walls.—At a meeting of the Harbour Board, on the 13th inst., the Special and General Works Committee reported the receipt of the following tenders for the proposed new sea-walls at the Town Quay:—Mr. Richard Docwra, 9,975*l.*; Mr. Edward Pritchard, including cofferdam, 7,000*l.* 10s. 6d.; Joseph Bull & Sons, 5,400*l.*; Mr. John Crook, with arbitration clause, 4,993*l.* The committee recommended the acceptance of Messrs. Bull & Sons' tender, the committee declining to accede to Mr. Crook's application for an arbitration clause in the contract. The recommendation was adopted.

Testing Lightning Conductors.—Messrs. Gray & Son say, with regard to testing lightning-conductors, that they not only test the conductors, but the whole of the building, to assure themselves that the whole is under conduction. They urge the great importance of this, "since the mere testing of the conductors is no proof of the security of the building itself, and this very few are acquainted with."

MASTERS AND MEN.

Birmingham.—All doubt as to the issue of the dispute at Messrs. Chance's glassworks at Spon-lane was dispelled on Saturday, when immediately upon the men in each "house" leaving off work, all except two of the furnace fires were drawn, it being understood that as no arrangement had been entered into between Messrs. Chance and the men, and the notice for the introduction of the proposed tariff and the reduction in wages having expired, the strike would then have commenced. To the last the men were inexorable, notwithstanding that their employers desired them to give the proposed system a trial before taking so serious a step. In order to give an opportunity to any of the men who may desire to return to work, Messrs. Chance have decided to keep two of their furnaces on; but at present the men are unanimous in their determination not to work at the terms proposed. The number of men employed in the immediate manufacture of sheet-glass is 260, and the persons affected by the strike, viz., the sorters, cutters, and packers, number nearly 500, so that about 750 persons will be thrown out of employment in consequence of the dispute.

South Shields.—A notice which had been issued to the *employés* of the Tyne Plate Glass Company's Works at South Shields, to the effect that owing to the depression in trade there would be a considerable revision of the wages and working hours, expired last week. The proposed terms,—which involve a reduction in wages and an increase in the hours,—have been unconditionally accepted. The number of men affected by the notice is about 600.

Kirkcaldy.—A few days ago the operative masons in the Kirkcaldy district were informed by their employers that their wages would be reduced 1d. per hour, but on a deputation of the men waiting upon the masters, and offering to submit to a reduction of ½d. per hour, the compromise was accepted.

Greenock.—The Greenock joiners have agreed to a reduction of 1d. per hour, making their rate of wages 7d. per hour.

Aberdeen.—The Aberdeen carpenters' strike has terminated, the men having unanimously agreed to return to work at the employers' terms.

Edinburgh.—The operative masons in the employment of Edinburgh masters not connected with the Builders' Association have struck work, in consequence of the employers refusing to withdraw the notice of a reduction in the rate of wages from 8d. to 7d. per hour. The men employed by members of the Builders' Association will, however, remain at work till it has been ascertained whether the Association is willing to withdraw the circular issued with reference to a similar reduction, and the abolition of the operatives' bye-laws on and after the 25th inst. A number of the Edinburgh bricklayers have also struck work on account of a reduction of 1d. per hour in the rate of wages. The joiners have agreed to submit to a reduction of ½d. per hour.

Haddington.—The masons employed at the Knox Memorial Institute, Haddington, have struck work, in consequence of a proposed reduction in the wages of from 8d. to 7d. per hour. The men offered, until the dispute in Edinburgh was settled, to take 7½d. per hour, and to abide by the settlement arrived at in Edinburgh, but this was declined.

ITEMS FROM INDIA.

The Bombay Municipal Corporation have obtained permission to raise a loan of 27 lakhs of rupees (270,000*l.*), to proceed with the construction of new drainage works for the city.

The report of the acting chief engineer for irrigation in the Bombay Presidency, for 1877-8, shows that during the last three years the area of land under irrigation has been more than trebled. The total area irrigated in 1877-8 was 25,328 acres.

Major Mant has been appointed by the Bombay Government conservator of ancient buildings in the Bombay Presidency.

CALCULATION OF STRAINS.

Sir,—Will you kindly allow me to ask through your columns how to calculate the strains on a *curved* jib of a crane? I can work out the strains on a *straight* jib, but the curving of the jib makes the calculations of strains more complicated.

Perhaps some of your engineering subscribers will kindly notice this.

F. B.

STRATFORD-ON-AVON.

The Shakspeare Memorial.—The erection of the library and picture gallery connected with the Shakspeare memorial buildings at Stratford-on-Avon has been commenced. The contractor is Mr. W. H. Lascelles, of London, who is also engaged in the construction of the theatre portion of the memorial, which will be completed by the poet's birth-day next year, when an inaugural ceremony will take place.

The Parish Churchyard.—A few weeks ago an inquiry was held at Stratford-on-Avon by a gentleman sent down from the Home Office, who at the conclusion signified his intention of recommending to the Home Secretary that the churchyard be closed immediately. Official notice to that effect has now been received, and a new cemetery will have to be provided at once. Such a place was much needed, it having been authoritatively stated that no fewer than 100,000 persons had been buried in the present graveyard. The ground is but three acres in extent, and has been constantly used for upwards of 1,000 years. Scarcely a grave could be dug without disturbing human remains, and some sickening sights have been witnessed at funerals.

COWL EXPERIMENTS.

"All discord's harmony not understood,
All partial evil, universal good."

Sir,—The cowl-testing at Kew, generally considered useless, if not ridiculous, is the mother of all the seeming discord in this matter. The real object for which this farce was enacted has yet to be made public.

I am extremely sorry that I was ignorant until now of Mr. Weaver's letter, which appeared in your important journal of the 31st of August last,* in which I find he accuses me of having improperly obtained, and of having very improperly used, certain information in my favour of cowl tests made by the Metropolitan Board of Works. He has before now spoken of my "very ingenious cowl," yet in thist etter he says, "speed alone is merely a factor; power, economy of cost, freedom from down-draught, capacity, permanence, and durability are features now generally recognised as not possessed by Mr. Banner's appliances." In proof that he is wrong in his last expression of opinion, I have made and sold during the last two years and a half nearly 3,000 cowls, and the demand for them is daily increasing.

When I wrote to you expressing a hope that some authoritative testing of cowls, as proposed by Mr. T. Blashill, would be made, I was ignorant of Mr. Weaver's very grave charges against me and my appliances, though practically it disposed of those against the latter. I say that, in my opinion, speed is power, and I maintain of the very first importance, and will decide his second merit, "economy of cost." As to freedom "from down-draught," Mr. Buchan gives my cowl an excellent character on that head, as he shows, or rather states, that it is only inferior to his own 4-in. fixed ventilator. Mr. Buchan, in your issue of last week, says,—"I feel inclined to back up Mr. Banner's cowl against the 'Archimedean' ventilator in the proposed new contest," which is very kind of him. Is he prepared to back his own for 100 guineas against the Banner cowl for the general useful effect of proper ventilation?

Mr. Buchan asks for some further information than I gave to you in mine of the 24th of August, that of which Mr. Weaver complains, and the latter accuses me of not only having obtained the information I then furnished you with improperly, but also of having improperly manipulated the particulars to answer my own purpose.

The information which Mr. Buchan asks for I have obtained this morning only, and annex it, though as the different cowls tested at each date were all of the same size, and were all tested on the same shaft, the further particulars which I now give still seem to be unimportant.

The cowls tested on May 18, 1876, were 12 in., and from the sewer to the top of the shaft the distance was about 55 ft. The cowls tested at the other three dates were all 6 in. The shaft used on June 15 was about 3 ft. horizontal, and 20 ft. high. The shaft used on Dec. 7, 1877, and March 6, 1878, was about 30 ft. above the level of the roadway. I was present at the tests made on May 18, 1876, only.

Now, as regards the most important point, the accusations in Mr. Weaver's letter, I shall call upon you with this, and satisfy you by documentary proof that they are wholly without foundation. The Metropolitan Board of Works is always on the watch to discover any means of lessening the complaints so constantly made of the inconvenience and annoyance experienced from sewer-gas; and at about the date of Mr. Weaver's letter to you I received from the Metropolitan Board of Works, as I shall show you, a considerable order, being the fourth, for my cowls of different sizes; upon which order there is this further intimation,—"There will be some more experiments made in other sewers": and I feel warranted in stating now that it has been intimated to me that the system I have suggested to the Metropolitan Board of Works is the only one which examination has encouraged the engineer of the Board to persevere with.

I did not ask permission of any one to publish the result of the tests which had been made, and which I attended by appointment made at the request of the engineer of a public Board, nor did I deem it necessary to do so. When I showed a statement which I had published, regret was expressed that I had done so, but not on the ground suggested, viz., "that the papers in question were confidential." It was at this time that I was informed that other tests had been made, in which the results obtained were still more favourable for my cowl. I asked for a copy of them. They were at once promised; they were subsequently furnished, and I published them. The tabular statement to which Mr. Weaver refers was not prepared by me. It is not deceptive, and was most certainly not garbled by me in any way, but is an exact copy of the statement I received. So far as I am concerned, I am most anxious that the truth should be arrived at, to whosesoever advantage it may lead, and I feel certain that the Metropolitan Board of Works will, in their own interests, help all comers to the same end.

For your fuller information I hand you herewith copies of my notes on the test at which I was present with the officers of the Board, who were directed to afford every facility in furtherance of the inquiry, and who have given me unhesitatingly, the more so, perhaps, from my having first introduced the subject to their notice, information thereupon as they acquired it, and in so doing they will hardly be suspected of exaggerating the results obtained.

In confirmation of the accuracy of the foregoing, allow me to annex, for your information, particulars of the currents of air obtained at Guy's Hospital, where fourteen cowls were fixed over two years ago; and to say that they continue to act perfectly, and that they have not been attended to even for oiling, altered or interfered with by any one in any way whatever, since they were first fixed.

There has been a determined effort made by some few persons to disparage the system, which, however, is nevertheless being steadily extended; and I may perhaps be allowed to add that at the suggestion of the late chairman of the City Lands Committee (Mr. Benjamin Colls), I am ventilating the Council Chamber, Guildhall: it is not yet quite completed, but last Thursday, when there were about 300 persons present for over four hours, the temperature inside the chamber was at no time more than 2° above the external temperature, which was 64°.

E. Gregson Banner.

*** Having seen the various papers referred to we have allowed Mr. Banner to reply to the statement objected to, notwithstanding the time that has elapsed since it was made. We must decline, however, inserting any rejoinder. We have no doubt whatever Mr. Weaver would be able to quote an apparent justification of his objection. There is a difference between what is known officially to the Board and what has been done by officers of the Board in their individual capacity.

* See p. 921, *ante*.

CUSTOMS IN MEASUREMENT.

PRICE *v.* WILLIAMS.

In the Abergavenny County Court, on the 11th inst., the judge (Mr. Herbert) and a jury of five were occupied some hours in hearing the case of John Price, builder, Blaenavon, *v.* John Williams, draper, Blaenavon. The Judge suggested that the case should be referred to arbitration, but the parties declined to consent. The claim was for 50*l.* balance of account for building a house for the defendant at Blaenavon.

It appeared that in April last the plaintiff signed a contract to erect a house for the defendant at Blaenavon, and after he had done a considerable portion of the work the defendant stopped him. The agreement specified "that the said John Price do undertake to do good work according to plans and specifications at 3s. 6d. per yard; all the walling in front of the building shall be of good rockwork, not rubble the same as the other walls, and the brick partitions to be 4s. per yard to the first scaffolding and 6s. per yard afterwards." The question was what was meant by the word "yard." At the time of the agreement the man who drew it asked the parties whether he was to put in the words "per cubic yard," and defendant replied, "you need not put it in, it will go with the rest." After the work was partly done plaintiff was stopped for want of material, and when fresh material arrived defendant put other men to finish the work. Plaintiff then sent in his bill to the defendant, and he disputed the amount, alleging that the work was to be done per cubic yard, not per superficial yard, as charged.

The Judge.—How can you measure by superficial measurement? There are three dimensions to every solid.

Mr. Morgan (for the plaintiff) said he should prove that all walling within 2 ft. thick was measured superficially. He called John Price, the plaintiff, who produced the signed contract. The walling was to be 3s. 6d. per yard, superficial measurement.

The Judge.—It will be for you to prove that. A superficial measurement was meant, and in order to do that you must prove that there is a custom established in the neighbourhood to that effect.

In reply to the Judge.—Any wall less than 2 ft. thick is measured superficially, and 2 ft. is fixed as the unit of thickness to begin to measure by cubic measure.

The Judge.—I must have it proved by a large number of witnesses that this is the custom at Blaenavon before I shall consider it an established custom.

John William Price said he was a contractor at Blaenavon.

The Judge.—What is meant by a yard of walling?

Witness.—That would be a perch.

The Judge.—I did not say a perch,—what is meant by a yard of walling?

Witness.—A yard of walling is 9 ft.

The Judge.—And how many feet thick?

Witness.—The same yard would be computed for a 9-in. wall as an 18-in. wall; it would be the same trouble to the builder to do it.

The Judge.—You mean that 9 superficial feet is a yard of walling no matter what the thickness?

Witness.—Yes.

The Judge.—What about a 2-ft. wall?

Witness.—It would then be a perch, and it would go as extras.

Mr. Walford (for the defendant).—Then you would not expect to be paid any more for a wall 9 ft. thick than for a wall 2 ft. thick?

Witness.—Well, according to the agreement. If I made an agreement I should stand to it.

Edwin Foster, sworn, said he was a builder, and had had considerable experience. A wall might be paid for per superficial yard, according to the thickness shown in the plan. I would take the measurement per superficial yard, and the plan would show the thickness. In the absence of a plan, we measure walling and calculate it as so much per superficial yard up to 18 in. in thickness and up to 2 ft., though from 18 in. to 2 ft. the work per yard is more expensive, but still it is a cubic yard; beyond 2 ft. in thickness walling is measured and charged for per cubic yard.

The plaintiff was then recalled to give his evidence in chief. He said he asked the defendant before the contract was signed if he need put "per superficial yard" in, and he said there was no need of it.

Henry Thomas, mason, Abergavenny, said he had always understood it to be the custom to measure walling per superficial yard, no matter what the thickness.

Joseph Bennett, master builder, in the employ of the Blaenavon Company, said he measured the work in question at defendant's request. His experience was that such work was always measured per cubic yard. The result of this measurement was 337½ cubic yards.

The Judge.—How much per superficial measurement?

Witness (after some calculation).—610 superficial yards. He had only known of dressed walling being taken per superficial yard. The front of this house was hammer-dressed, but hammer-dressed work was measured cubically. When the solid yard is meant, the word perch is generally used.

For the defence, Mr. Chapman, Pontnewydd, builder, sworn, said that he had seen the agreement referred to and he was not aware of any custom as alleged by the plaintiff and his witnesses, but he had always considered that the custom was entirely the other way, and if he had been called to measure the work according to the agreement produced he should have decidedly taken cubic measurement. Referring to the price named in the agreement he considered 3s. 6d. per cubic yard a fair price, and that the defendant would be overcharged if paid at that rate per superficial yard.

Ellis Stephens, builder, Abergavenny, corroborated the last witness in every detail, both as to custom and price of work.

The Judge then summed up the case and pointed out that the evidence of the custom sought to be established was most contradictory, and that on the defendant's side there was evidence showing that, custom or no custom, if the plaintiff's method of measurement was taken he would be receiving too high a price for his work.

The jury, on returning into Court stated that they had unanimously agreed that upon the evidence given, the custom sought to be established by the plaintiff was not substantiated, and therefore they disallowed that part of the claim; they also disallowed a considerable number of the other items in the account, the result being a verdict for 2*l.* 10*s.*

ARCHITECTS' ACTIONS.

WILLIAMS *v.* WILLIAMS.

In this case, heard in the Abergavenny County Court, on the 11th inst., before Judge Herbert, Mr. J. F. Williams, architect and surveyor, Pontypool, was the plaintiff, and Mr. John Williams, draper, Blaenavon, the defendant.

The action was brought to recover 13*l.* 2*s.* 6*d.*, for professional services rendered to the defendant and his then solicitors (Messrs. Gibbs & Llewellyn, of Newport). It appeared that in August of last year a neighbour of the defendant's filed a bill in Chancery against him in a dispute over a party-wall in building some houses in Blaenavon. The dispute was referred to and settled by arbitration. Previously to the arbitration the plaintiff, who was at Weston-super-Mere, having a week's holyday, was telegraphed for by the defendant to come to Blaenavon at once, to measure the ground and prepare plans of the same, for the purpose of the suit, and for this he charged 3*l.* 3*s.* The other items were for other plans, for journeys to Newport to see the defendant's solicitors, &c., which were detailed in evidence.

The defence was that the plaintiff had received 8*l.* 8*s.* for all these services under the award, therefore he could not charge again.

Judgment was given for nine guineas and a half, with costs.

SAUNDERS *v.* MASON.

This action, tried in the County Court, Newport, Isle of Wight, on the 16th inst., was a jury case from Ventnor, in which the plaintiffs, Messrs. Saunders, architects, claimed 48*l.* 7*s.* for drawings and plans of proposed buildings at the Royal Hotel.

Mr. Theodore Ridley Saunders gave evidence that on the 6th of September, 1877, defendant consulted him as to a building he proposed to erect where the tap of the hotel stood. Defendant stated that he was pledged to some outlay in building under his lease. Witness recommended a kind of wing to the hotel, with restaurant, &c., and bar in front, with through communication to the road, and spoke of a proposed recreation-ground close by. Defendant said, "Capital idea. I shall be able to get rid of my cold meat." In reply to a question as to expenses, defendant said it was for witness to give his ideas and advice, and they could be cut down if he (defendant) found them too large. On the afternoon of the same day witness, with two assistants, proceeded to take a survey and levels of sections. He afterwards proceeded to prepare plans.

The Judge.—Don't you think it would have been fair to have given some idea as to price before you went into that elaborate plan?

Witness.—It was not usual with such clients. His instructions were to fill the land, and he did it. Defendant, when he showed him these plans, said, "You are for building a palace." On the 24th of September defendant called on him and spoke of the building, and that led to the plaintiff sending him another plan headed "Royal Hotel, proposed new Tap." Then they had an interview on the subject, and defendant said he was bound to spend only 200*l.*, but he proposed borrowing 400*l.* of the ground landlord, and that would make it 600*l.* for the building. The smaller set of plans was then drawn, and on the 13th of December defendant called to see them and took them away with him, witness telling him they were his own property. Defendant kept them five months, and then came and said the plans must be cut down one story.

Mr. Livesay, C.E., was called, and gave evidence which went to show that the charges for the work were reasonable.

Defendant was called, and denied the allegation that when he first consulted plaintiffs as to the building he declined to say anything definite as to cost, and left it to them to carry out their own ideas.

The jury found for the plaintiffs, 5*l.* for the first plan, and 22*l.*, including the 5*l.* paid into Court, for the other items of the bill, and costs.

Royal Institute of British Architects. The opening meeting of Session 1878-79 is fixed for Monday, November 18th.

THE COTTAGE SYSTEM FOR TRAINING CHILDREN OF THE POOR.

A report by Dr. F. J. Mouat and the late Captain G. Bowly, on the home and cottage system of training and educating the children of the poor, recently published, will be found of value by those who interest themselves in this important subject. It includes plans of the Princess Mary's Village Home, Addlestone; the Home for Little Boys, Farningham; the Philanthropic Society's Farm School, Redhill; and many other institutions of the same character. During the last few years several Boards of Guardians have resolved to try the experiment of erecting schools upon the family system, and plans on that system have been approved of by the Local Government Board in six cases. At the date of the publication of the report, plans were under consideration for the Kensington and Chelsea school district, and these have since been sanctioned. It is to be regretted that Captain Bowly did not live to see the report published. He was obliged to go on sick leave early in the year, and died at Malta on the 31st of March last.

SANITATION IN DUBLIN.

Mr. W. P. O'Brien, local Government inspector, held an inquiry at Dublin, last week, as to the incidence of the sanitary expenditure in Dublin. In opening the proceedings, Mr. O'Brien said the expenditure of the Dublin urban district had been, up to the present time, a charge upon the borough fund or borough rate. It was so constituted under the Sanitary Act of 1866, continued under the Public Health Act of 1874 and the Public Health Act of 1878; but this Act contained an important provision in section 226, which provided that all expenses incurred by the urban sanitary authority in the execution of this Act, and not otherwise provided for, should be defrayed as follows,—that was to say, in the case of a council or a borough, out of the borough fund or borough rate. That provision was precisely analogous to the provisions contained in the previous Sanitary Acts; but there was this proviso at the close of the section,—

"Provided also that if application be made to the Local Government Board whereby it shall be alleged that it would be inequitable or inconvenient, in the district of any urban sanitary authority, that the said expenses shall be borne as last aforesaid, the said Board may, after inquiry by order under seal, alter the incidence of such charge, in respect of the whole or such part of the expenditure referred to, as to them shall appear to be fair and equitable."

And in section 227 there was a provision which existed in the previous Acts, to the effect that any limit imposed on or in respect of any rate by any Act of Parliament should not apply to any rate required to be levied for the purpose of defraying any expenses incurred by the sanitary authority of any urban sanitary district for sanitary purposes. Now, after the passing of that Act a letter was addressed, on August 20th, to the Local Government Board by the town clerk, inclosing a resolution passed by the corporation,—

"That representation be made to the Local Government Board under Section 226 of the Public Health Act (Ireland), 1878, alleging that it would be inequitable and inconvenient that the expense of carrying the said Act into execution in Dublin should be borne as provided in the said Act, and requesting that the Board may, as therein provided, after inquiry, alter the incidence of such charge in respect of the whole or such part of the expenditure referred to as to them shall appear to be fair and equitable."

Upon the receipt of the letter the Local Government Board wrote, asking for a more specific statement as to the grounds upon which it was alleged that change should take place, and they received a letter from Mr. Gray, as chairman of the committee, setting out these grounds at length. Mr. O'Brien having read this letter, said that the question being an entirely novel one, the Local Government Board sent a paper to their counsel, and Mr. Monahan's opinion being that the case was clearly within Section 226, had directed him to hold the inquiry.

Among the witnesses was Mr. James Boyle, chairman of the Public Health Committee. Examined by Mr. E. D. Gray, M.P., on behalf of the committee:—

"In your opinion, is the sanitary expenditure of Dublin sufficient for the requirements of the city?—Wholly insufficient. The Public Health Act of 1878 has cast new duties upon the sanitary authority; it has conferred additional powers and increased the duties very much. An increased staff is necessary in order to carry out the objects and provisions of the Act of 1878.

Do the public expect improvements in the sanitary condition of the city?—Yes.

Have the Public Health Committee been obliged to consider the propriety of a reduction of their expenditure on sanitary matters?—They have been obliged to reduce the sanitary staff below what is necessary for carrying out the public health business of the city. Officers have been dismissed, and expenses absolutely necessary, in my opinion, have been either curtailed or dispensed with.

Have you received communications from time to time from the City Treasurer, asking that the Public Health Committee should not make too heavy drafts upon the Borough Fund?—Repeatedly. I have been repeatedly obliged to withhold the payment of accounts, which there were no funds to meet. At the present moment it is so."

The result of inquiry will be made known in due course. In the meantime we notice that the Executive Committee of the Dublin Sanitary Association has been considering the question of organising popular lectures on sanitary science, to be delivered in various parts of the city, and has entrusted the duty of carrying out the necessary details to the secretaries.

STAINED GLASS.

Newbury.—The annual meeting of the St. Nicholas Stained-Glass Window Society, the object of which is to raise funds for placing stained glass windows in the parish church, was held on the 27th ult. The rector, the Rev. E. I. Gardiner presided, and in his opening remarks referred to the proposal that the windows which it was desired to have placed in the church should form a connected and unbroken series of subjects,—those in one aisle to represent our Lord's miracles; those in the other aisle our Lord's parables; and those in the clearstory, the Old Testament saints on one side, and the New Testament saints on the other. There were fifteen windows, and if they could raise 150*l.* a year they would be able to put in a window every year, so that the work would be completed in fifteen years. Mr. Hardman, of Birmingham, who had been invited to attend the meeting, gave some interesting particulars with reference to the project.

Eltham.—A new stained-glass window has been uncovered in the parish church, Eltham, Kent. The window is a four-light one, and contains eight scenes in the life of St. John the Baptist, and the wheel above represents six cherubim, with a dove in the centre. The work was executed by Messrs. Craven, Bourne, & Co.

Strathaven.—Messrs. W. & J. J. Kier, of Glasgow, have been commissioned by the Duke of Hamilton to execute a large heraldic stained-glass window, to be placed in Strathaven Church, near Hamilton.

Littleover.—A new stained-glass window has just been inserted in Littleover Church, in memory of the late Mr. Morley, a resident of the parish. The work has been undertaken and executed by Mr. Woodhouse, of Derby, the glass being supplied by Messrs. Hardman, of Birmingham. The window is in the south side of the church, and consists of three lights. The centre light has the figure of "The Nativity," that to the left "The Visit of the Shepherds," and that to the right "The Visit of the Wise Men offering their Gifts."

Basingstoke.—Another stained-glass window has been added to St. Michael's Church, Basingstoke. It is by Messrs. Lavers, Barraud, & Westlake, and represents the four writers of epistles, viz., St. Paul, St. Peter, St. James, and St. Jude, the figure of St. John being with the evangelists in another window.

Southampton.—For the east window of the chancel of the new church of St. Mary, Southampton, of which the Prince of Wales recently laid the foundation-stone, Mr. Street has prepared designs for the three lights of the window. The designs illustrate events from the Passion, and the Crucifixion will be the subject of the central light. The east window is to be a Confirmation memorial to Bishop Wilberforce.

Hempstead.—A stained-glass window has been fixed in Hempstead Church, in memory of the late Mr. and Mrs. Charles Walker, of Gloucester, by Messrs. Camm, of Birmingham.

Kingsbury.—A stained-glass window has just been completed for the north aisle of Kingsbury Church. The subject, "The Good Samaritan," occupies three lights. The window has been designed by and erected at the cost of Mr. Swaine Bourne, of Birmingham, in memory of his father.

Newcastle-on-Tyne.—One of the three-light windows in the north-aisle of St. Mary's R. C. Cathedral, Newcastle-on-Tyne, has just been filled with stained glass in memory of the late Mr. Stephen Quin, from a design by Mr. H. M. Barnett, of the Victoria Stained Glass Works, Newcastle.

Oxford.—A stained-glass six-light window has been placed in the new Wesleyan chapel at Oxford by Mr. T. Cox, of London. It is of a foliated design, representing the principal Scripture flowers and plants. It is given by the temperance societies of Oxford and district as a memorial of the late Rev. George Maunder. A rose-window over the pulpit has also been fixed, the gift of Mr. Nix, of Oxford, in which the rose and lily are introduced, also by Mr. Cox.

DISSENTING CHURCH-BUILDING NEWS.

London.—The memorial-stones of a new Wesleyan chapel in Stamford-street, Blackfriars, were laid on the 10th inst. The site selected is very circumscribed in size and shape, and has necessitated the placing of the Sunday School over a portion of the chapel, and the lighting of the larger part of the chapel by means of a skylight. The pews will be stepped, and the aisles made to radiate from the rostrum. The probable cost is 4,000*l.* The architect is Mr. James Weir, and the contractors Messrs. Rider & Son.

Churchstoke.—A new Wesleyan chapel is about to be built here, from plans prepared by Mr. R. Hurst, architect, Welshpool. Mr. John Pickstock, of Meifod, is the builder, the amount of his tender being 400*l.*

Bristol.—A new Congregational Chapel at Sneyd Park, Bristol, has been opened. The building is in the Early English style, and is cruciform in plan; the building being 94 ft. in length, while the extreme width across the transepts is 60 ft. The width of the nave and chancel is 22 ft.; but on either side of the former are ambulatories, 4 ft. wide, giving access to the end seats of the nave, the whole arrangement being carried so as to prevent any interruption to the view of the chancel and the minister. The transepts are slightly raised above the nave level, and have freestone parapets at the junction with the cross. Adjoining the church is a lecture-room, 34 ft. by 24 ft., with a raised platform. The chapel is intended to afford sittings for about 300 persons. Local sandstone of a yellow hue is used for the external facing of the walls, Bath stone being used for all tracery and moulded work. The whole of the work was executed from designs by Mr. Stuart Colman, architect, and the builders were Messrs. Cowlin & Son. The wood and stone carving was done by Mr. E. Sheppard, of Bristol.

Cotham.—A new Wesleyan Chapel has just been opened at Cotham. It is Early Decorated in style. The walls are of Pennant stone, from the Stapleton and Hanham quarries, with Westwood stone dressings. The interior dimensions are,—length, 66 ft. 3 in.; width, 45 ft. 3 in.; height, 48 ft. There are Sunday school premises and vestry attached. The chapel will accommodate 800 persons, and the school 450 children. The total cost of the building, including the site, has been about 9,000*l.* Mr. Curwen, jun., of Liverpool, is the architect.

Manchester.—A new Wesleyan Chapel, situated at the corner of Heslington-street and Raby-street, Moss-lane East, Moss-side, was opened on the 15th inst. The large room on the ground-floor, which for the present will be used as a chapel, will seat 300 persons, additional accommodation for about 150 people being provided in the gallery. Adjacent to the gallery is a room intended for ladies' sewing meetings. Contiguous to the chapel are seven class-rooms, four being at the front and three at the back, with yards and conveniences. Over the three class-rooms at the rear of the chapel is a room, measuring 56 ft. by 22 ft. On the basement is a kitchen, fitted with a hoist to each of the upper floors, together with the heating apparatus. The whole of the woodwork of the chapel is pitch-pine, stained and varnished. The roof principals are of hammer-beam construction, and the walls and roofs are plastered. Externally the building is faced with white headers, relieved with strings of stock brick and stone dressings. The entrances to the chapel are numerous. The cost of the building will be about 3,800*l.* The work has been executed by Mr. Wm. W. Harrison, builder, Greenheys, from the designs and under the superintendence of the architect, Mr. John Lowe, of Manchester.

Houghton-le-Spring.—On the 26th ult. the new Presbyterian Church at Houghton-le-Spring was opened for worship. It is built entirely of stone, the facing being sneck rubble, and the dressings chiselled. All the windows have traceried heads, label-moulds, and deep reveals, and are filled with stained glass by Messrs.

Wailes & Strang. The tower is temporarily roofed in, the funds at present not permitting the building of the spire, which is designed to reach a height of about 106 ft. The roof is open-timbered, and in one span of 36 ft. It is covered with green Westmoreland slates. The internal fittings are of pitch pine. The church is to be warmed by hot-water apparatus, supplied by Messrs. Walker & Emley. Messrs. Robson & Tremble, of Hetton-le-Hole, are the contractors for the work, the cost being about 3,000*l*. The accommodation is for 400. Mr. W. Lister Newcombe is the architect; and Mr. John Wilford has acted as clerk of works.

Oxford.—A new Wesleyan chapel has been opened in Oxford. It partially occupies the site of the old chapel, and is brought within a few feet of the street-line. The style adopted is the Decorated Gothic of the latter part of the fourteenth century. The front elevation to New Inn Hall-street consists of a centre gable, flanked by a tower and spire, about 130 ft. high, and on the other side by a gable entrance to one of the galleries. The entrance to the other gallery is by a tower doorway, which, as it is opposite Cornmarket-street, has been specially treated. The interior has nave and aisles, and the arcades are of stone. The roof is an open hammer-beam one, supported by polished shap granite columns, with carved stone capitals. The seats are open, and of selected red wood, and they afford accommodation for 850 persons. The wrought-iron railings and gates are by Messrs. Marshall, of Cheltenham; the gas-fittings by Mr. Gough, of Gloucester; and the carving by Mr. Frith, of Gloucester. The architect is Mr. Charles Bell, of London. The builders are Messrs. Symm & Co., of Oxford, and the total cost, including extra land, is about 10,000*l*.

Newry.—The new Presbyterian church in Sandys-street, Newry, was re-opened on the 20th inst., after alterations and additions. The old gallery has been removed, and a new one erected, with open-bench pews. A new pulpit has also been erected. The designs were made by Mr. W. J. Watson, C.E.; and Messrs. Whelan & Watson, builders, Newry, were the contractors. The entire cost of the works has been about 1,000*l*.

Fyvie.—The Free Church of Fyvie has been re-opened, after alterations and decoration. The work has been executed from the plans of Mr. R. Ewan, architect, Glasgow, and under his immediate supervision, the contractors being Messrs. Teunon, carpenter, Turriff; Fordyce & Sons, builders, Turriff; W. & C. Duthie, plumbers, Turriff; J. & A. Pirie, slaters, Fyvie; J. & J. Hutcheon, plasterers, Methlick; James Garvie & Sons, painters, Aberdeen; and William Shirras & Son, lamp manufacturers, Aberdeen. The cost has been upwards of 400*l*.

Edinburgh.—During the past twelve months there has been in process of building a place of worship for the accommodation of adherents of the Free Church resident in the Newington district. The church now advancing to completion formed part of the originally approved design for a group of joint buildings. Its site is at the north-west angle of St. Andrew's-terrace and West Mayfield. The ground-plan is cruciform, with a segmental apse at the east end of the nave. Both transepts are double, and are deeply recessed, while the nave has an aisle on each side. The nave is 88 ft. in length, by 42 ft. wide, including the aisles, each of the transepts receding about 18 ft. In the interior, the nave and aisles are separated by a series of dressed stone piers with moulded bases and carved capitals, from which spring mouldings forming pointed arches. At the intersection of the nave and transept roofs an ornamental *flèche* rises to the height of about 30 ft. from the roof-ridge, and is turned to account for purposes of ventilation. The church will be seated to accommodate upwards of 700 persons, the seating being in varnished pine, and of open-pew construction. The whole buildings have been carried out from designs furnished by Mr. Hippolyte J. Blanc, architect, the style adopted throughout being Early Gothic of French type.

New Private Chapel at Aske Hall, Richmond, Yorkshire.—On Tuesday, the 15th inst., the private chapel which has been erected for the Right Hon. the Earl of Zetland, from designs prepared by Mr. Thomas Oliver, architect, of Newcastle-on-Tyne, was opened by his Grace the Archbishop of York, assisted by the Rev. Mr. Hill, his lordship's chaplain.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Drogheda.—The new Dominican Church of St. Mary Magdalen has recently been dedicated. The church is cruciform in plan, and consists of nave, transepts, chancel, and side chapels. The total length inside is 111 ft., by a width of 30 ft. in the nave, and of 62 ft. across the transepts. The material used is the limestone of the locality, the walling being of pitched-faced work, relieved by bands of white limestone finely chiselled. The dressings of the windows and doorways are also of white limestone. The tower stands in the angle formed by the nave and south transept, and forms one of the entrances to the church. The entire height of the tower (which is surmounted by a gabled roof) is 90 ft. The internal height from floor to apex of ceiling is 45 ft., the roof being boarded and panelled in pitch-pine, and having arched principals at intervals. The nave roof is carried across the transepts on arcades of two pointed arches. The columns on which these arches rest are of Aberdeen granite, with carved Portland stone caps and bases. The arches between transepts and side chapels and the arched ribs of chancel ceiling rest on shafts of Caen stone, with carved caps. The chancel has a semi-octagonal termination, the centre face of the octagon having a three-light traceried window, and each of the two side faces an arcade of triplet windows, resting on detached shafts. These windows are filled in with stained glass by Mayer, of Munich. The subject of the centre window is the Crucifixion. The works have been carried out without a general contractor by local tradesmen. The architect is Mr. Geo. Ashlin, of Dublin. The boundary railings have been executed by Grendon & Co., of Drogheda. The cost has been about 8,000*l*.

Sheffield.—A new oratory has just been added to St. Marie's Roman Catholic Church, Sheffield. It has been erected from the designs of the architects of the church, Messrs. M. E. Hadfield & Son, and is situate in the eastern aisle of the south transept. It takes the form of an upper chapel, 10 ft. above the church floor-level, approached from the south transept by a spacious winding staircase of Hopton Wood stone. Externally it will form a part of the new sacristy and rectory buildings at the corner of Norfolk-row and Norfolk-street.

Culmullen.—A new Roman Catholic chapel has been opened at Culmullen, co. Meath. It is Early Gothic in style, the architect being Mr. W. Hague. The plan of the building comprises nave, 75 ft. long, by 28 ft. wide; chancel, 22 ft. by 17 ft.; sacristy, porch, and tower, with spire at the junction of the sacristy and chancel. The exterior faces of the walls are of hammered limestone ashlar, with limestone dressings to the quoins and buttresses, and white and coloured pressed bricks in the band-strings. The work has been carried out by Messrs. Hall & Son, builders. Messrs. Neill & Co. supplied the altar, and the stained-glass is by Messrs. Early & Powell.

Books Received.

Ure's Dictionary of Arts, Manufactures, and Mines; containing a clear Exposition of their Principles and Practice. By Robert Hunt, F.R.S. Vol. IV. supplementary to the Seventh Edition. Longmans, Green, & Co. 1878.

Science is tramping along at such a pace, and in so many directions at once, that it is difficult for the recorders to keep up with her. No sooner was the last edition of Ure's Dictionary of Arts, Manufactures, and Mines published than it was found that several of the articles in the earlier portions of the work required some additions, owing to the advances which had been made in the useful applications of science, and that new articles were necessary to record the progress of several examples of inventive ingenuity. To meet this necessity, it was determined to produce a supplementary volume, in which all the required additions should be made, and all improvements, and new applications of value, carefully recorded. This seems to have been completed in a satisfactory manner. This supplement will be found to include everything of interest relating to arts, manufactures, and mines which has claimed attention since the publication of the previous volumes, and the four volumes represent fairly the state of these divisions of human industry up to the commencement of the present year.

Several new articles by good hands have been introduced.

In his preface the able editor, Mr. Robert Hunt, acknowledges considerable obligations for information furnished,—in many cases at considerable personal labour,—and for the contribution of matter giving the results of original inquiries in connexion with sundry other articles,—to many leading men of science, manufacturers, and others. The new discoveries in respect of sound and late information as to the electric light are given.

COTTAGE BUILDING AT RUGBY, AND THE LOCAL GOVERNMENT BOARD.

The Rugby Local Board of Health have just submitted an interesting point to the Local Government Board with respect to the building of cottages within the township, and in reply the central Board in London have already given a decision of considerable importance as to the powers of local boards over dwellings of this character.

It appears that for some time past the Rugby local authorities have hesitated to pass plans for cottages having only two bedrooms, on moral as well as sanitary grounds. On the other hand, it is contended by the builders that where larger houses are built, mechanics take in lodgers in order to enable them to pay the rent, and some members of the Local Board consider that this is even more objectionable on sanitary grounds than the small cottages with two apartments only. The Local Government Board having been appealed to to determine the question, have decided that the Local Board have no power to refuse to pass such plans.

Miscellanea.

Sewer Ventilation at Eltham.—Last week the chairman and several members of the Ashford Local Board, with their clerk and surveyor, proceeded to Eltham, for the purpose of inspecting the system of sewer ventilation adopted there. On their arrival they were met by Mr. C. Haworth, the surveyor, who fully explained the entire system. The shaft or tower through which the sewer gas passes was erected in 1866, and is situated at the top of the High-street of Eltham. The shaft is 338 ft. above Trinity datum, and is built of brick with stone facings, and is about 65 ft. in height, and 19 ft. above the top of the principal sewer. The air from the sewer rises into a confined chamber in the base of the shaft, in which are four rings of ordinary coal gas-jets, kept continually burning. The inflammable air here ignites with the coal gas, and then passes through three other chambers, filled with charcoal, containing about 2½ bushels, and becoming free from offensive odour, ascends to the top of the shaft through apertures on each side, and is from thence carried away by the passing winds. There are at the present time nearly six miles of sewer connected with the shaft, and an additional three miles will very shortly be carried into it. The nearest grating or ventilator in the sewer is two miles distant from the shaft. The charcoal is changed about once in three months, and the estimated cost of the coal gas, including that supplied to the three ornamental lamps round the shaft, is under 10*l*. a year.

St. James's, Piccadilly.—This church has been re-opened. The interior, one of Wren's best works, has undergone renovation and some alterations. The marble and bronze enclosure of the altar-table has been raised and extended, and the pews at the east end have been cut down and converted into open seats. At the west end the central vestibule has been enclosed, paved with marble, and lighted with a window, and the marble font, the work of Grinling Gibbons, has been removed into it.

Vandalism in Ireland. — Mr. Patrick Traynor writes to a Dublin paper complaining of the mutilation of the cross of St. Boyne, at Monasterboice, co. Louth. He says that in one of the compartments, in which there is a sculptured group representing the Baptism of Christ, the figure of the stooped Christ was the one selected for destruction. Off this figure the destroyer has broken the left leg, and in doing so has laid bare the white marble ground of the body of the cross.

Liverpool Engineering Society. — This Society held its usual fortnightly meeting on Wednesday evening, at the Royal Institution, Colquitt-street. The attention of members was called to the "Stellar" code of day and night signals,—the invention of Captain Harrison, of London. A paper was read by Mr. W. W. Squire, Stud. Inst. C.E., on "Stone Masonry." The author pointed out the qualities characteristic of good stone for engineering purposes, and described the principal stones employed for such work. The red sandstone, near Liverpool, was shown to be remarkably hard and good; the strain required to crush this stone being, on the average of six experiments on small cubes, two tons and a half per square inch. The classes of masonry dealt with in the paper were ashlar and coursed rubble. The author condemned the use of ashlar in marine engineering work, where strength and durability are necessary. Coursed rubble backed with concrete, intermixed with large rough blocks of stone, seemed to him to be the most desirable method of building heavy retaining-walls, and large solid masses of masonry in general. A few remarks on stone-cutting, and plant for erecting stone masonry, concluded the paper.

Sanitary Matters at Westgate-on-Sea.—At the last meeting of the Isle of Thanet Rural Sanitary Authority, held at Minster, Dr. Robinson, the medical officer of health, drew the attention of the board to the want of proper drainage and building regulations at Westgate-on-Sea, which was, he said, a very growing place, with two miles of roads laid out for streets, and was frequented by numerous visitors for the benefit of their health. It was, therefore, highly necessary that its sanitary arrangements should be looked after. At present the houses were drained by cesspools, and there were no building regulations. If things were allowed to remain as at present, he thought the ultimate result would be the depreciation of the value of the property there, and the ruin of what might be a rising and prosperous place. He advised the Board to apply to the Local Government Board for urban sanitary powers for Westgate. Mr. Kennett said he had no doubt that Mr. Davis, the proprietor of the Westgate-on-Sea estate would support the Board in obtaining powers, as it would improve his property. It was decided that the necessary steps should be taken to obtain urban powers for Westgate.

Preston Hall, Aylesford.—The various additions and alterations to this mansion, one of the seats of Mr. H. A. Brassey, M.P., are now completed. The entire kitchen, offices, and servants' apartments have been remodelled, a still-room and pastry larder, and gun-room constructed, and all the larders and pantries provided with fittings of the most recent invention. Dormitories have also been built to accommodate the men-servants and visitors' valets. These alterations necessitated the removal of the old laundry, and the erection of a new building at some distance from the mansion, consisting of a large warehouse, laundry, drying closet, and residence for the laundry maids. There is a coachhouse capable of holding six carriages, a harness-room, and a room for grooms. These works were designed by Mr. Edward W. Stephens, architect, Maidstone, and carried out by Messrs. Wallis and Clements and Messrs. Cox Bros.

Municipal Hall, Birmingham. — The work of furnishing and fitting up the new Municipal Hall at Birmingham has been entrusted, after competition, to three local firms. Messrs. Manton, Sons, & Gilbert, of Birmingham, have been selected to furnish the Mayor's parlour, the Town Clerk's private room and offices, the retiring-rooms for the council, the committee-rooms, ante and cloak rooms, and clerks' offices; Messrs. Collier & Placknett, of Warwick, the council-chamber; and Mr. S. Barber, of Birmingham, the rate department. The task assigned to Messrs. Manton, Sons, & Gilbert has just been completed. The furniture has been executed from designs by Mr. Yeoville Thomason, the architect of the hall.

Corn Exchange, Maidstone.—The work of decorating the Maidstone Corn Exchange is now nearly completed, from a design by Mr. E. W. Stephens, architect. The whole of the work has been executed by Mr. H. G. Brown, of Snodland. In order to afford greater safety to the audience in the event of the breaking out of a fire, or any false alarm, the doors of the Exchange and Concert-hall have been made to open outwards.

Restoration.—At the last meeting of the "Notes and Queries Society," Liverpool, Mr. Caine, in his inaugural address, referred to the work of the society in opposition to architectural restoration. After saying that Mr. Morris, the poet, had promised the society a paper, he sketched the progress of the defence of ancient buildings, which had resulted in the formation of the London association. After Mr. Ruskin, Mr. Samuel Huggins had, he thought, contributed most to sustain the agitation. He described the various fashions of restoration in vogue, and concluded by references to the restorations proceeding at Ormskirk and Chester. By and by we should awake to see what we had done; that we had destroyed the old England of Shakspeare, Cromwell, Hampden, and Milton, so far as mural association was concerned, and had set up a sham new England, with lies written in stone all over its face.

Birmingham Sanitary Supply Association.—The first ordinary meeting of this Association was held on the 16th inst. The directors' report stated that the depôt was opened for business on the 15th of August last, and arrangements had been made with several patentees and manufacturers for the exhibition and sale of sanitary apparatus and appliances. In order to further develop the business of the Association the directors proposed to retain an architect and a consulting engineer in addition to their present sanitary engineer and manager. The report went on to state that the upper and middle classes were exposed in their residences to dangers from which the poor were exempt, the poor being carefully looked after by health committees and local boards, while in many apparently well-appointed residences the sanitary arrangements were deplorably defective.

Treasure Trove.—In digging the foundations of a new shaft at the rear of premises in the occupation of Messrs. Morgan & Co, in Long-acre, a day or two ago, the workmen came upon a chest containing a large number of gold and silver coins of the reign of Henry VIII. in a good state of preservation. Besides a quantity of miscellaneous articles, the box contained about twenty pieces of church plate and ornaments. Among these were a massive chalice, a ciborium, and a monstrance, all set with precious stones; a crozier-head, a lapis lazuli crucifix, a pectoral cross and chain attached, and some other articles. The whole of the things comprised in the "find" are now in the possession of the Treasury, and we understand that they will shortly be on exhibition at South Kensington Museum.

Sketching Club Competition—The fifth annual competition between Metropolitan Schools of Art Sketching Clubs was held on Tuesday at the Dudley Gallery. The following clubs competed, viz.:—Gilbert, Lambeth, South Kensington (female), West London, and South Kensington (male). The judges were Mr. Pettie, R.A., and Mr. Peter Graham, A.R.A. The prizes were awarded as follows:—For Figure, to Mr. W. P. Cornish (Gilbert); for Landscape, to Mr. Nightingale (Lambeth); for Animals, to Mr. E. R. Breach (West London); for Design, a prize of 1*l.* each to Mr. Cornelius S. Reich (West London), Mr. L. Victor Reich (West London), and Miss E. Harrison (Lambeth); and for Sculpture, to Miss E. C. Billows (West London).

Fires.—On the 16th inst. the premises of Mr. R. Pearson, joiner, Rose-street, Hopwood-lane, Halifax, were destroyed by fire. A large quantity of finished work was destroyed, besides tools and machinery. The loss is estimated at 850*l.*——On the 18th inst. a fire broke out in the joinery department of the Gloucester Wagon Works, formerly belonging to Wm. Eassie & Co., and after burning for several hours ended in nearly the total destruction of the sheds, shops, and engine-house, comprised in what is called the Lower-yard, with their valuable contents, and a large quantity of timber lying contiguous. The loss is stated at 30,000*l.*

Liverpool.—The first tree of the Prince's-road Boulevard was planted on the 17th inst. by Mr. Alderman Hubback. The strip of land which is to form the boulevard, it will be remembered, was recently purchased by the Corporation, and when planted will form a fine promenade from near Upper Parliament-street to Prince's Park.——The Health Committee propose to obtain a steam hopper barge, for the purpose of conveying the sewage of the town away out to sea, where it will be deposited.

Metropolitan Board's Offices, Spring-gardens.—We announced some time ago that a new story was to be added to this building. The work is now in progress. The increased accommodation which the added story will give consists of twelve offices of large dimensions, together with three large strong rooms, and a corridor in the centre, 6 ft. wide, running the whole length of the building. In order to give increased facilities of access from the lower parts of the building to the upper floors, there will be a lift provided contiguous to the main staircase, by which the clerks and other officials can be taken to the top of the building, or to any floor to which they may wish to go. Mr. Vulliamy, the Superintending Architect to the Board, has furnished the designs. The cost of the enlargement will be 5,600*l.* Messrs. Hook & Oldrey are the contractors.

Proposed Scotch Church on the Victoria Embankment.—At a recent meeting of the Brechin Presbytery, documents were laid on the table in connexion with the Scotch National Church proposed to be erected on the Thames Embankment, at an expense of 60,000*l.*, and asking the assistance of the Presbytery. Some of the members thought the sum might be better expended in the erection of half a dozen churches in different parts of London. It was agreed to recommend the movement to the favourable consideration of "the members within the bounds."

Riviere's Promenade Concerts. — The "Stabat Mater" drew an immense crowd to Covent Garden on the evening of the 18th; and its performance must have satisfied them. Madame Lemmens-Sherrington, in particular, sang the last air, "Inflammatus," superbly. In the second part, Mrs. Georgina Weldon did more than gratify a not altogether surprising curiosity: a thousand echoes said, unmistakably, "Well done!"

Fatal Scaffold Accident. — On Monday evening Mr. Langham held an inquest at Charing-cross Hospital on the body of Henry Hodges, a labourer. The evidence showed that deceased was assisting at a scaffold erected by Messrs. Styles, contractors, at 12, Regent-street, for the purpose of putting a new roof to the house, when he slipped and fell, sustaining shocking injuries. Verdict: "Accidental death."

TENDERS

For the erection of new premises, 15, Whitechapel-road, for Mr. Blomfield Burnell. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Reed	£3,495 0 0
Axford	3,125 0 0
Read & Son	2,978 0 0
Abrahams	2,929 0 0
Hosking Bros.	2,882 0 0
North Bros.	2,845 0 0
Page	2,792 0 0
Morter	2,789 0 0

For model dwelling-house, Duke's-mews, Kensington, for the trustees of the late Miss Cecil. Mr. W. J. Worthington, architect:—

Williams & Son	£2,277 0 0
Cowland Bros.	2,268 0 0
Chivey	2,191 0 0
Outhwaite & Son	2,138 0 0
Clark & Bracey	2,098 0 0
Langmead & Way	2,090 0 0

For cleansing the three cold-water reservoirs at Abbey Mills Pumping Station for one year, for the Metropolitan Board of Works:—

Mowlem & Co.*	£225 0 0
Ford & Norris	225 0 0
Harris	160 0 0
Holloway (accepted)	158 10 0

* Or for three years, 210*l.* per annum.

For alterations and repairs in High-street, Thame, Oxon, for Mr. E. W. Reynolds. First contract. Mr. H. J. Heath, architect:—

Hobdell & Fisher (accepted).

For alterations and additions to the Old Bell, Kilburn, for Mr. W. Cossey:—

Marr (accepted)	£1,143 0 0

For the execution of general works in District B, for one, two, or three years, for the Metropolitan Board of Works:—

	1 year.	2 years.	3 years.
Per cent. above schedule of prices.			
Nowell & Robson	20	20	20
Hook & Oldrey	15	15	15
Mowlem & Co. (accepted)	—	—	2½
Per cent. below schedule of prices.			
Pearson	2½	3	3

For the erection of four detached villas, in Woodchurch-road, Kilburn. Mr. Banister Fletcher, architect:—

Bayes	£7,000 0 0
Prout	5,680 0 0
Castle	5,484 0 0
Butcher	5,450 0 0
Hobern	5,381 0 0
Whiteman (accepted)	5,140 0 0

For the erection of four detached villas, in Caufield-road, Kilburn, for Mr. Thomas Yeo. Mr. Banister Fletcher, architect:—

Whiteman (accepted)	£5,280 0 0

For additions to No. 36, Notting-hill-square. Mr. Banister Fletcher, architect:—

Lucas & Son	£502 0 0
Bayes	498 0 0
Whiteman	480 0 0
Hobern	426 0 0

For the erection of a block of model residences, in Rodney-street, Pentonville, for the Sanitary Dwellings Company (Limited). Mr. Banister Fletcher, architect:—

Prout (accepted)	£5,504 0 0

For new steam brewery (exclusive of engineer's works), at Horsell, Surrey, for Mr. Stedman. Mr. Henry Peak, architect. Quantities supplied:—

Steer	£1,300 0 0
Marriage	1,290 0 0
Garnett	1,172 0 0
Pearce & Clark	1,144 12 0
Strudwick	1,115 0 0
Mason	1,110 0 0
Goddard & Sons	1,060 0 0
Harris	997 5 0
Whitburn (accepted)	995 10 0

For new residence, near Woking Station, Surrey. Mr. Henry Peak, architect. Quantities supplied:—

Mitchell Bros.	£2,999 0 0
Pearce & Clark	2,989 0 0
Garnett	2,976 0 0
Goddard & Sons	2,653 0 0
Whitburn	2,640 10 0
Colls & Sons	2,630 0 0
Martin, Wells, & Co.	2,619 10 0
Moon	2,580 0 0
Harris (accepted)	2,333 10 0

For three pairs of cottages, on the Ashley Park Estate, Walton-on-Thames, Surrey. Mr. Henry Peak, architect. Quantities supplied:—

Alderton	£1,300 0 0
Knight & Sons	1,220 0 0
Rose & Annett	1,195 0 0
W. & A. Brown	1,193 0 0
Clark	1,170 0 0
Faulkner (accepted)	1,045 0 0

For pair of houses, on the Cholmeley Estate, Reading, Berks. Mr. Henry Peak, architect. Quantities supplied:—

Winter	£1,025 0 0
Filewood	988 0 0
Jenkins	960 0 0
Simonds	943 0 0
Weaver	910 0 0
Bishop	900 0 0
Godwin*	899 14 9
Goodey & Fulker	896 14 0
Bourton	769 0 0

* Accepted with additions.

For small detached house, Cooper-road, Guildford. Mr. Henry Peak, architect. Quantities not supplied:—

Swayne (accepted)	£310 0 0

For the construction of a bridge, retaining-walls, &c., for the Cannock Old Coppice Colliery Company (Limited). Messrs. T. C. & J. P. Sharp, engineers. Quantities supplied:—

Barton	£3,950 0 0
Moss	2,951 0 0
Cooper	2,818 0 0
Bell	2,650 0 0
Lovatt	2,500 0 0
Horseman & Co.	2,400 0 0
Hilton	2,349 0 0
Hartley (accepted)	2,189 0 0

For the erection of a house, offices, and boundary-wall, in the Parade, Epsom, Surrey, for Mr. Wm. Reader. Mr. J. Hatchard Smith, architect:—

Hooker (accepted)	£2,250 0 0

For rebuilding No. 4, Watney-street, St. George-in-the-East, for Mr. R. Hall. Mr. W. Bisiker, architect:—

Palmer	£565 0 0
Roper	500 0 0
Hollist & Son	480 0 0
Moyle & Son*	452 10 0

* Accepted, subject to sundry alterations. An error of 97*l.* 10*s.* was made in the Tender, the original being 355*l.*

For alterations and repairs to No. 62, Watling-street, City, for Messrs. Heywood, Higginbottom, & Co. Mr. W. Bisiker, architect:—

Palmer	£145 0 0
Calnan & Co. (accepted)	140 0 0

For the Town Hall, Museum, Free Library, and Schools of Science and Art, Reading. Mr. Thos. Lainson, architect. Quantities by Messrs. Fowler & Hugman, and Mr. C. Lansdown:—

Scrivener & Co.	£65,580 0 0
Browne & Robinson	64,612 0 0
Lucas Bros.	63,900 0 0
Bull & Sons	63,165 0 0
Holland & Hannen	62,875 0 0
Manley & Rogers	62,040 0 0
Chappell	59,987 0 0

For new schools for 1,020 children, and master's house, in the Mitcham-road, Croydon, for the Croydon School Board. Messrs. Rutley & Blackwell, architects:—

Hobbs	£11,726 0 0
Williams	10,247 0 0
Marriage	10,156 0 0
Jarrett	10,100 0 0
Smith	9,130 0 0
Legg	9,896 0 0
Taylor	9,853 0 0
Hearle	9,566 0 0
Ward (accepted)	9,313 0 0

For alterations [at the Jubilee Tavern, Nos. 2 and 3, Gee-street, Somers-town, for Mr. C. W. Harwood. Mr. J. R. Furniss, architect:—

White	£767 0 0
Bishop	719 0 0
Gould & Brand	689 0 0
Anley	680 0 0
Simpson	592 0 0
Arnold	590 13 0

For alterations and additions to new Board-room, &c., Broadway House, Hammersmith, for the Fulham District Board of Works. Mr. Alfred C. Bean, architect. Quantities supplied:—

Eyles	£7,480 0 0
Pickersgill	7,322 0 0
Braid & Co.	7,000 0 0
Crockett	7,000 0 0
Lathey Bros.	6,706 0 0
Mears	6,430 0 0
Parkinson	6,399 7 0
Brealy	6,350 0 0
Jones & Co.	6,281 0 0
Parker & Evans	6,010 0 0
Beale	6,027 0 0
Wagner	5,890 0 0
Scott (accepted)	5,671 0 0

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